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CONSUMERS' RESEARCH

Bulletin

CONTENTS

For the Home

DDT—New Insecticide 5
Lux Soap Flakes 25

Cosmetics

Anti-Perspirants and Deodorants 9

For the Automobile

Automobile Storage Batteries 13

Miscellaneous

Skippy Peanut Butter Tested Again 12
Traces of Things in Relation to Life and Health—I 16
Photographic Paper 24
Sterilization of Baby Supplies 26
Brief 1945 Cumulative Index 26

Features

Off the Editor's Chest 2
The Consumers' Observation Post 3
Ratings of Motion Pictures 27
Phonograph Records ..... Walter F. Grueninger 31

CONSUMERS' RESEARCH

Vol. 16 • No. 4 **BULLETIN** October 1945

Off the Editor's Chest

THE GI who ordered a hamburger shortly after the day of victory over Japan and was told by the waitress that it was meatless day, certainly voiced the sentiments of most U.S. civilians in his retort, "Don't you know the war is over?" There are many indications that people are thoroughly tired of governmental restrictions and regulations and will press for early elimination of the wartime controls that remain.

To counteract this natural and desirable tendency, OPA officials are whooping it up for bigger and better price-control and stricter enforcement. An attempt is being made, in at least one section of the country, to whip up enthusiasm and support for these ideas by putting on a big "anti-inflation" campaign, making it appear that unless the OPA's peacetime program receives whole-hearted support there will likely be a most disastrous period ahead for consumers, one more crisis in a long series of economic crises (for each of which some governmental remedy—and a corresponding set of bureaucratic officials—is customarily proposed as the only possible solution).

One of the propaganda leaflets presents a comparison of prices of certain items of food after World War I (without price control) and those of World War II (with price control). The price of eggs, for example, is listed as 92 cents a dozen in 1919-20, and 50 cents a dozen in the 68th month of World War II Price Control. No mention, however, is made of the fact that only a few months ago eggs were almost unobtainable in many cities. Pork chops, listed as 50 cents a pound after the last war, are officially priced at 37 cents a pound now—*if* you can find any. Pork, except for pigs feet, which seem to be plentiful and in very poor demand, has been about as rare as caviar. The quality of coffee, listed as 30 cents now against 49 cents in the previous post-war period, is a matter of much criticism among consumers who remember, even after several years of bad coffee, what good coffee should taste like. It is generally known in trade circles that little if any high-grade coffee is coming into this country, because the price ceilings make it unprofitable for coffee traders to handle the better grades. The fact that for many months everyone, practically without exception, who wanted chicken had to pay considerably more than ceiling prices to obtain it, was well-known to OPA officials.

The OPA's propaganda leaflet makes no mention of clothing prices, no doubt because it is in this field that OPA made its outstanding and most notorious failure. Merely a memory are the men's shirts at $1.50 and $2. Shorts of madras, poplin, or broadcloth are not to be found at any price in some sections, particularly in size 40 and over. Several underwear factories, which have been working on government orders at higher prices than those allowed by the OPA for civilian products, have announced that they will be obliged to shut down, now that their government contracts have been cut back, since they cannot profitably make underwear to sell at prices set by the OPA. It should be kept in mind that the underwear factories receive no government subsidies, whereas from time to time

(Continued on page 25)

Scientific and Technical Experts and Editors: F. J. Schlink, R. Joyce, M. C. Phillips, A. R. Greenleaf, and Charles L. Bernier. Editorial Assistant: Mary F. Roberts.

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It will be advantageous if you will, whenever possible, send prompt notice of change of address at least a month before it is to take effect, accompanying your notice with statement of your old address with name in full. At least three weeks' notice must be given in any case. This rule, however, regarding long advance notice does not apply to military personnel.

¶*CR will, of course, gladly change addresses for men and women in the services as often as required by changes in station and other circumstances.*

★★★For a brief cumulative index of 1945 BULLETINS preceding this issue, see page 26.

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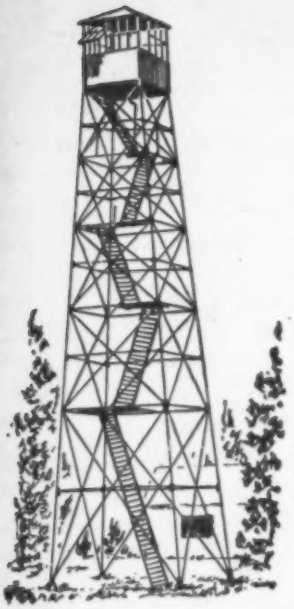

The Consumers' Observation Post

WITH BUTTER in more plentiful supply, it is perhaps no longer necessary to attempt to prove to those whose price control policies were keeping it off the market that butter has a fundamentally important place in the diet. An important finding, however, has just been reported by the Wisconsin Agricultural Experiment Station that butterfat, even though it does not contain any of the B-complex vitamins, was effective in preventing deficiencies of the B vitamins in laboratory animals fed on rations containing only limited amounts of B vitamins. If the Wisconsin researchers' findings can be applied to human nutrition, there is some possibility that butter may make an important contribution in insuring that our requirement for B-complex vitamins, of which most Americans receive only relatively small, perhaps often inadequate, amounts in their diet, will be filled.

* * *

TIRES on the family car still need to be well cared for, for the prospects of abundant supplies are still some months away. The chief bottlenecks are reported to be a shortage of rayon cord and of manpower, and strikes in the factories.

* * *

SOAP, which promptly disappeared from the grocers' shelves when a high government official some months ago urged that it be rationed so that more could be sent to Europe, will now be stretched, by government order. Manufacturers are now required to use up to 10 percent more "builder" materials in household laundry products. Builders are alkaline substances that increase the cleansing action of soap in washing badly soiled garments. They are considered useful to a certain extent in hard-water districts, but are of doubtful desirability in soft-water sections. Soaps containing such materials are harder on the hands than plain or "unbuilt" soaps, and besides soaps with added alkali are unsuitable for washing delicate fabrics.

* * *

ATMOSPHERIC OR GAS FADING of cellulose acetate rayons is causing an increasing number of complaints by consumers to department stores and dry-cleaners, according to Rayon Textile Monthly. The fading is usually noticed in garments left hanging for a considerable length of time, and shows up as streaks, usually on the side or across the top. Blue dyes are particularly susceptible. One case is reported where a hotel clerk received two dresses, one pink and one blue, from the cleaner in perfect condition and hung them for the night in a small storage room that contained a gas-burning hot-water heater. In the morning, when the dresses were delivered to their owners, the blue dress was badly streaked with red; the pink one, however, was in good condition.

* * *

CORN MUFFIN AND OTHER MIXES, ready to add liquid and bake, may be easily prepared at home, if the advice of a correspondent of The Rural New Yorker can be followed. Directions for corn muffins call for combining 4 cups white flour, 4 cups yellow cornmeal, 4 tablespoonfuls baking powder, 2 teaspoons salt, 1/4 cup sugar. Sift flour with baking powder and salt. Add cornmeal and sugar and mix all well. Store in cool place until needed. When ready to use, combine one well beaten egg with one cup of sweet milk and add two cups of mixture. Stir and add two tablespoons of melted shortening. Fill greased muffin pans about two-thirds full and bake in hot oven (450°F) for 15 or 20 minutes. Other dry mixes for cake, pastry, and biscuits may be made up which will save time and dishwashing for the busy homemaker.

SHOULD BABIES BE BORN in the hospital or at home? Hospitals are unsuited for care of the newborn, in the opinion of Dr. Harry Bakwin, New York City professor of Pediatrics. He points out that the hospital nurseries are crowded and expose the infant to various diseases. Furthermore the separation of mother and baby is unnatural and the system of bringing babies to the mothers at fixed intervals is not conducive to proper breast feeding, particularly during the baby's first three weeks.

* * *

NUTRITIONISTS are worried, according to the Food Field Reporter, that the American public will prefer to eat meat—now that it is again to be freely available—and neglect fruits and vegetables. There is no doubt at all that an increase in the amount of meat eaten would bring an improvement in the health and stamina of many people. The Stefansson experiments made some years ago under strict medical direction proved that a man could live on nothing but meat and maintain excellent health. Probably many men would like to try it for a change.

* * *

STREAMLINING OR EFFICIENT DESIGN—which do homemakers really want? The appliance company's sales department would undoubtedly vote for streamlining, but an interview with Miss Elaine Knowles of Cornell University, reported in a recent issue of Electrical Merchandising, highlights the need for equipment that really aids in making work easier for women. Sinks, kitchen tables, cupboards, stools, and washers need to be made in different heights so that stooping, in the case of tall women, or reaching, for short women, will be held to a minimum. It was discovered, for example, in a Cornell survey that 9 out of every 10 women queried wanted a high oven if they could get it when they made a replacement of their present stove so that they would not be obliged to reach down into a hot low oven or to stoop in removing a hot heavy dish.

* * *

MILK, that nearly "perfect food," can be too much of a good thing. It is one of the chief causes of acne, according to Dr. S. E. Sweitzer of Minneapolis. Examination of students enrolling in the University of Minnesota showed that more than half had acne in varying degrees. The high incidence of this skin condition was attributed, in part, by Dr. Sweitzer to the belief widely held in the locality that "if you take a child off milk his teeth are going to fall out." Less milk, and elimination of excessive fat and sugar were advocated as useful dietary measures against acne.

* * *

ATHLETE'S FOOT, an infection of the skin caused by a kind of fungus growth, is widely prevalent, affecting about half the industrial workers in the country, reports Science News Letter. Self treatment is frowned on except for very mild cases; in these, the affected areas may, according to a recommendation of The American Medical Association, be dusted with boric acid powder, consisting of 1 part of powdered boric acid diluted with 9 parts of talcum powder and well mixed. In addition, the feet should be kept clean and dry; shoes and socks aired when not in use; shoes should be selected that are light and aerated so far as practicable (particularly during the summer months). Those open-toed shoes the girls wear seem not to have been such a bad idea after all.

* * *

BENDIX HOME LAUNDRY units that operate by dropping a quarter in the slot are being tried out in the Bronx (in New York City) and South Bend, Indiana, according to an appliance trade journal. The housewife takes her laundry to the station, weighs it, puts it in the machine, drops her coins in the slot and waits half an hour to take her damp-wash home. The charge is 25c for 10 pounds; the needed soap is included at this price. Until the new washing machines become available, and for the family whose living quarters are not fixed, this project sounds like an excellent idea. It also gives the prospective purchaser an opportunity to decide from actual trial whether or not she would like to own the appliance.

* * *

KEEP STEEL WOOL from pricking your fingers when you use it for scouring pots and pans, advises a correspondent writing to the Farm Journal. The method

(The continuation of this section is on page 29)

DDT

CONSUMERS have read so much about the new DDT insecticide that they have great interest in the possibility of using this new product in their own homes for control of flies, mosquitoes, fleas, silverfish, bed bugs, and other particularly difficult pests. The government's publicity releases have been almost uniformly enthusiastic about the possibilities of this new poison, whose chemical name is dichloro-diphenyl-trichloro-ethane.

All too little emphasis, unfortunately, has been given to the dangerous potentialities of the material to the non-expert user, and to the fact that the substance, though not a universally effective insecticide, may do great harm because of its suppression not only of the undesired insects but of some which have an important part to play in the healthy balance of nature.

The first discovery of the insecticidal properties of dichloro-diphenyl-trichloro-ethane took place in Switzerland some years ago; the first study of the product in the United States was shrouded in strict military secrecy. It was in the middle of 1943 that pilot plant production of the product began; thereupon the various military arms made exceedingly efficient use of the substance in huge quantities. By mid-1945, approximately 2 million pounds of DDT were being produced each month; the principal military application of the poison was against disease-carrying insects, such as body lice and mosquitoes.

THE much publicized new insecticide, DDT, is not the magical substance that many have been led to assume. It will not kill, pronto, all the insect pests that annoy mankind. It has been found effective when used on bedbugs, ticks, houseflies, mosquitoes, dog and cat fleas, lice, some cockroaches, and certain garden pests. It is ineffective against the boll weevil; and not so effective (or no more effective) against grasshoppers, the Mexican bean beetle, and mosquito larvae as are some other widely used poisons. DDT should not be used indiscriminately, for this chemical, so deadly to certain insects, may be harmful to man. Any injury to human beings may be a delayed one, and may perhaps defy medical treatment; the possibilities in this respect have by no means been fully investigated as yet. Anyone using this new insecticide should take precautions against inhaling it in the dust form, and take particular care to prevent contact with the skin of DDT in oily (kerosene-like) solutions (the form in which DDT products will be chiefly sold for household uses).

In the first place, DDT is a poison, not only to insects, but to man and the higher animals, and it must not be indiscriminately, carelessly, or ignorantly used. Its toxicity is not yet fully understood, but it is said to be about as dangerous to human beings as lead arsenate (which is a very dangerous poison).

Some of the agricultural extension workers have been doubtful about the wisdom of some of the official governmental publicity which has gone out about the new insecticide, and are themselves inclined to take a much more conservative position. They hesitate, however, to appear to be in disagreement with the favorable publicity for the product which has come from other official sources because of an old rule in the government service that one branch must not disagree with the findings of another, even though Branch II may know that Branch I has gone off half-cocked or may, in an unusual case, even have expressed itself in a way that could imply dangers to the health or safety of the consuming, taxpaying public.

One state extension service does not recommend the product, and is not even certain as yet that it is a good thing for farmers to employ as an agricultural insecticide. An important reason for this hesitancy is the difficulty or impossibility of controlling its action so that only unwanted insects are affected. This station's staff are, however, telling farmers the properties and uses of DDT, so far as now known, and allowing them to use their own judgment as to whether they should apply it on their crops and stock. Authoritative information about the degree of toxicity of DDT is still lacking and must await further work in the universities and by the Food and Drug Administration and the Public Health Service, where experimental work is still going on.

DDT cannot be used with the same abandon as the contents of a can of *Flit*, but a lot of people are going to think

they can do exactly that, and they are going to spray it very vigorously, without even taking the slightest precaution to prevent inhalation of or contact of the substance with their skin or with food or animal feeds that may be in the same room or space.

The U. S. Department of Agriculture has said very recently that "Information at hand indicates that for certain purposes and under certain conditions the effective and safe use of DDT by civilians at this time is possible"—which is a long way from saying that consumers should substitute DDT in a broad way for the other measures that they have been accustomed to use against insects.

DDT has been found to be extremely beneficial—strictly from the insecticidal standpoint—in controlling certain insects around dairy barns, piggeries, and poultry houses; it is also effective against flies, lice, clothes moths, and roaches, and in combination with fungicides it has been found effective on certain crops for control of flea beetles and leafhoppers; however, proper dilutions for various uses have not yet been determined. At the same time, DDT has been found "ineffective against most aphids, the Mexican bean beetle, the tobacco hornworm, turnip aphid, the melon aphid, cabbage seedpod weevil, the tomato russet mite, various mites and spiders and some ants, also the screw worm, heel fly or cattle grub, the chigger and the poultry mite." (With respect to some insects—certain species of ants, cockroaches, spiders, and ticks—reports so far in hand are conflicting.) One specialist indicates that he doubts whether DDT will be used as a general garden insecticide unless in combination with other standard insecticides. Bees and other insects which perform a highly essential function in pollinating many crops, are found to be highly susceptible to the action of DDT. A 10% DDT powder has been recommended for cockroaches but seems to have no very marked advantage over the widely used sodium fluoride. The Department of Agriculture recommends DDT for bed bugs, but CR would specially advise caution in respect to this insect in view of the long period of possible contact of the human users of the bed, with either the wood or bed clothing, that might have received and retained residues of the chemical.

Since DDT is both a contact poison and a stomach poison, Prof. John O. Pepper, extension entomologist at the Pennsylvania State College, *cautions against permitting spray or dust to get on food or feed* when the material is being applied. At the present state of information, DDT should not be used on animals or plants with either food substances or animal feeds exposed in the room or nearby. Prof. Pepper also warns against the use of DDT of unknown strengths. Demonstrations of the Pennsylvania State Agricultural Extension Service have been with one-half of one percent concentrations, and these have been "fairly effective over a fairly long period" (8 to 12 weeks) when applied (in the proper way) to walls and ceilings of barns and buildings.

One serious objection to the present large-scale development of commercial marketing of this type of product is that many of the containers do not indicate the concentration, and some will undoubtedly use the material in too strong a solution so that it ought to be further diluted before use—which would be all right, perhaps, if the consumer could be depended upon to realize the importance of performing this dilution and to carry it out correctly. The DDT solutions which are dissolved in oil or deodorized kerosene must be handled with particular care, since the oily vehicle readily penetrates the skin of human beings and animals and carries the poisonous element with it.

The action of the chemical upon insects is to paralyze them as it kills, and this same property could affect animals or even man. In fact, there have been some reports already, not yet fully authenticated, of two cases of partial paralysis (one of an arm and one of a jaw, lasting for a few days to a week) resulting from handling the oil solutions of DDT. (The most widely sold form of DDT is a solution in a thin petroleum oil similar to deodorized kerosene.) In one reported case, where the exposure was deliberate for purposes of testing the possible effect, the damage to health did not occur for some days; then the effect was extremely unpleasant, and lingered on for a considerable period, possibly a year. As yet, medical men have no effective means of dealing with the problem, and it is believed that in cases of poisoning little assistance could be afforded the victims.

There is a grave question about labeling, and some of the products simply are sold as "containing DDT." One, for example, says "100% active ingredients. . .contains DDT" and then continues with the names of the insects which are killed. Such a label is entirely

unsatisfactory, because it is quite possible that in many cases products will contain only enough of the new chemical to justify sales promotion of the product as a DDT insecticide and thereby to take advantage of the extraordinary publicity which this substance has received for the past several months.

The characteristic action of DDT on animals used to test the poison for toxicity has been neurologic (affecting the central nervous system), reminding an observer, Dr. Alvin J. Cox, of the State of California Department of Agriculture, of the condition of dogs suffering from rabies, a disease affecting the brain. When an affected animal was examined at autopsy, the conditions of bodily damage found internally were not sufficiently severe to account for the death; the magnitude of the actual damage to the organs and nerves remains in doubt.

DDT is especially toxic to fish and certain other cold-blooded animals. As a result of its use, there has been some killing of fish in streams and ponds and also of insect-feeding birds. The possibility of poisonous residues from agricultural use of DDT is of particular importance because no effective method of removing DDT from plants or produce has yet been devised. (This was true also of the metallic poisons used as insecticides, in their early days, and still is true of these, to a considerable extent.) As has been noted DDT should in no case be applied to forage, grain, or other crops that are to be used as animal feed. Effects of DDT in causing retardation of the growth of certain food plants have already been noted; it is not yet known whether the rate of decomposition of DDT in the soil is such as would prevent accumulation of injurious amounts from repeated applications over a period of time. Results of continued application upon the soil and upon the food grown in it might in some cases be as serious as have been the results of long-continued spraying and dusting with arsenical insect poisons.

Common vegetable plants, it is said, have not been adversely affected by low strengths of DDT applied in dust or "aerosol" form, but it is thought that some other plants would suffer some injury.

The extreme toxicity of DDT to beneficial insects and wild life is evident from the recommendation that there should be no use of DDT on forest areas at a rate beyond *one pound per acre*—a rate so low as not to be practicable for application by any means except airplanes or other specialized equipment of the trained entomologist. Even at that very low application rate, the hazard to fish, beneficial insects, and wild life is such that only a qualified entomological expert should venture to carry on the process in woodland areas.

While the action of DDT against some insects seems almost miraculous, largely because of the long-lasting qualities or after-effect of the spraying, the killing action takes place at a much slower rate against certain other insects than with commonly used and well-tried substances such as pyrethrum and rotenone. It is also doubtful how successful DDT will be in localities where it is exposed to sunlight and weather, and whether its action may not be much more transient under those conditions than in applications indoors, where the length of time over which the killing effect has persisted after spraying has in some cases been phenomenal.

DDT is only very slightly soluble in water, but it may be used with appropriate means of obtaining a water emulsion that can be sprayed. Such a spray will leave a light visible residue on the sprayed surfaces, which in many cases, as in household uses, might be objectionable. With the light oil or kerosene type of spray, evaporation quickly disposes of the visible residues; for this type of DDT solution, a dosage rate of about one quart of spray to about 250 square feet of surface has been recommended.

If the material is to be used in a hand-operated spraying device (the wisdom of such use around the household or office is certainly doubtful at this time), it is advisable for the operator to wear a mask. Some ventilation is necessary, of course, during the application, since otherwise the inhalation hazard would be very serious, and it must be remembered that the oil or deodorized kerosene type of spray must not be used near fire or other source of heat of high temperature. (The kerosene solutions can be readily distinguished by a faint naphtha-like odor, or, as a rule, by a label claim of "100% active ingredients"—which claim is justified in part, since a kerosene spray alone is effective to a degree against some kinds of insects.)

DDT or dichloro-diphenyl-trichloro-ethane is produced by simple means from monochlorobenzene and chloral hydrate (the "knock-out drops" drug). The chemically pure (but not the commercial) form of DDT

is a colorless and odorless crystalline substance insoluble in water and fairly stable under most circumstances. It tends to decompose in the presence of alkalis and should, therefore, be used in neutral or slightly acid media for best stability.

The raw material is quite inexpensive, especially in the light of the considerable dilution in which it will be used in most household applications. The many firms who are now getting into the business of selling DDT for home use by consumers are quite evidently going to make handsome profits —at least if it doesn't develop that they run into legal troubles because of the dangers to careless or uninformed persons who will use the material. (Some now marketing DDT for household and other uses try to avoid this by a wording on the label which seeks to contract them out of all responsibility to the purchasers, whether such users follow the manufacturers' directions or not.) Typical prices for commercial forms of DDT insecticide for household spray use are 50c to $1 a pint.

There are four forms of DDT going to market at the present time, and possibly other forms will be available before long. One is a "water dispersible" compound, chiefly for agricultural uses, with a concentration of active material that varies from 20% to 50% DDT; this product must be greatly diluted for use. A second form, better known to the layman, is a small percentage of DDT dissolved in oily material like kerosene; this form requires special care in handling because of the ease with which such oil penetrates the skin. A third form is a dust made of DDT mixed with a carrier and often containing a fluoride as well.

The Army made wide use of another form of application known as an aerosol, a means of dispersing DDT very thinly over large areas and volumes in the form of a fine fog; the aerosol (a fog or fine mist) is expelled from a sealed "bomb," contents of which are discharged at high pressure and high velocity in a few seconds. An excess stock of bombs of this type as made for military use by a large manufacturer, containing 3% DDT in a volatile solvent, is already being offered for sale in a New York department store at $3.98 each (25 bombs, $99.50—thus no saving in a wholesale purchase). On account of the very fine diffusion of the material dispersed by means of the aerosol bomb, this method *may* be relatively safe in careful hands. On the other hand, CR considers it unwise for the layman or inexperienced person without engineering, chemical, or other laboratory training to purchase DDT for application in this or any other form until a better understanding of the product is achieved than exists at present outside professional circles of entomologists and a few medical investigators. In case the aerosol method is used, it is important to close off the space in which vaporization was carried out and not to go into it for four or five hours after. (An aerosol, being a mist of very fine particles, takes a long time to settle completely.)

One remarkable characteristic of DDT that has been mentioned is that of long-time effect, as a result of which it kills insects that arrive long after its application, and that come to rest on or light on sprayed surfaces. Thus theoretically complete elimination of certain types of insects is possible if the spray is repeated at about the time interval required for eggs to be laid and hatched. In one reported instance, every fly that settled on rafters that had been sprayed with the DDT preparation fell off dead before morning, for a period of four months. In another case, a fly cage made of window screen, after spraying, killed the flies within with 100% effectiveness (but took a longer and longer time to do so) up to seven months after spraying. This property of DDT gives extraordinary promise of future usefulness, if only the question of toxicity to human beings and domestic animals can be satisfactorily dealt with.

It is possible that many new scientific developments in the insecticide field are on the point of being discovered. Something even newer and deadlier than DDT is now in the wind—the gamma isomer of benzene hexachloride, which is said to be potent against flies in only half the strength required for DDT. Like DDT, this substance is almost insoluble in water but is quickly dissolved in alcohol, acetone, and other solvents; it has DDT's characteristic, too, of being extremely toxic to fish. If and when this new product, to be known as *Gammexane*, becomes available, consumers should approach it with the same caution and doubt with which the present article advises them to consider DDT.

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"Personal Daintiness"—

a report on anti-perspirants and deodorants

WHAT ODORS have allure and which are offensive? An article on perfume in a recent issue of one of the better-known pocket-size magazines reported that the current best selling perfumes are those with a frank animal note including approximations to suggest the odor of the human body. This will be news indeed to a number of advertisers including one large soap company whose advertisements for some years have practically made "Body Odor" a social disease.

Aside from the olfactory aspects of the problem, armpit perspiration has an unsightly effect on clothing and produces discolorations that often cannot be removed by the dry-cleaner. In the interests of conservation of clothing and good grooming, the use of an anti-perspirant is, in some cases, more necessary in the winter months than in summer. Heavy clothing does not lend itself to washing with soap and water as warm weather cottons and rayons do, and many women find dress shields a nuisance. Thus many who perspire freely prefer to use from time to time some preparation that actually checks the flow of perspiration.

Before discussing various advertised products, let us consider the nature and function of sweat. Two sets of glands in the skin are involved: The sebaceous glands which secrete sebum, an oily semi-fluid substance; and sudoriparous or sweat glands that secrete sweat. The chief function of these sweat glands is to regulate body temperature and to excrete certain waste products from the body. Sweat of a normal, healthy person has a slight but not unpleasant odor, at first. After a time, however, it decomposes, particularly when combined with sebum and the resulting products are more or less offensive to the nostrils. It should be noted that the excretions of sebum and sweat are greatest in the region of the armpits, owing to the presence there of the greatest number of the large sweat (apocrine) glands. Furthermore warmth, moisture, and lack of exposure to light favor the decomposition of the excretions.

Since the sweat glands perform a normal and an essential elimination function there are some who feel that it would be unwise or unhealthy to interfere with the process. While there are no studies recorded in medical or scientific literature that relate to this aspect of the problem, it might be pointed out that the perspiration suppressors commonly used by women are applied to, and check the flow in, a relatively very small area of the body. It seems logical to infer that the amount of perspiration in other parts of the body is increased correspondingly to compensate for the loss of a particular area of evaporation. (Complete stoppage of perspiration, of course, would be fatal.)

Simple Methods

The commercial preparations that are commonly available fall into two groups, deodorants and anti-perspirants. The deodorants do not check the flow of perspiration but are designed to cover, absorb, or eliminate perspiration odor and prevent decomposition of the wastes eliminated through the sweat glands. Masking an unpleasant odor with a pleasant one is an old technique, and sponging the armpits with a swab of cotton wet with Eau de Cologne has some temporary value. There is some suggestion, however, that when the perspiration odor is covered in this fashion, the combination may not always be pleasant.

More effective are some of the powder and paste preparations. The powders usually consist of a base of talc, precipitated chalk, or kaolin (a kind of clay) which absorbs the odor-forming sweat constituents. The addition of zinc oxide or zinc peroxide, boric acid, or benzoic acid provides a mild antiseptic which inhibits bacterial action and prevents fur-

ther decomposition. Boric acid in powder form is readily obtainable at the drugstore and a simple deodorant powder may be made at home at a cost of about 10 cents by combining 5/8 oz. (3 scant tablespoonfuls) of boric acid with 1/8 oz. (2 scant teaspoonfuls) of zinc oxide, and 1/8 oz. (2 level teaspoonfuls) of your favorite talc. The boric acid powder may, of course, be used alone. Commercial deodorant powders customarily include zinc stearate or some other metallic stearate to help make the powder adhere to the skin. Zinc stearate, zinc oxide, and boric acid are readily available at many drugstores.

The paste and cream deodorants consist essentially of an oil base, such as petrolatum, hydrogenated oil, or benzoinated lard, to which mild antiseptics such as benzoic acid, boric acid, zinc oxide, or salicylic acid may be added. As one expert has described the process, the grease acts to absorb the odor in much the same way that uncovered butter absorbs odors from other food in the refrigerator. The antiseptic substances prevent any further bacterial action.

Instead of the grease type of base, a vanishing cream may be used with hydrogenated oil and hexamethylene tetramine (compound derived from ammonia and formaldehyde) as the antiseptic. There may, however, be some unpleasant allergic reaction to the use of this compound. If the essential materials can be secured, a paste deodorant may be made at home at an approximate cost of 10 cents for approximately one-half ounce by mixing one level teaspoonful of zinc oxide (powder) and one-half teaspoonful of precipitated chalk with 3 level teaspoonfuls of vanishing cream. This mixture will become hard if it is not used promptly.

Checking Perspiration

The anti-perspirants which actually *check* the flow of perspiration are reported to be more popular than deodorants. The best known formula of this type has for many years been a solution of aluminum chloride in water in various strengths. The top limit that has been considered safe was tentatively set some years ago by the American Medical Association as a 25 percent solution (calculated as $Al_2Cl_6.12H_2O$). Later usage, however, has indicated that a solution of 10 to 15 percent will probably serve adequately and this will be less irritating. It can be made up by any druggist at something like 2 oz. for 25 cents.

Aluminum chloride is a powerful astringent. When applied to the skin, it reacts to form a protein precipitate. A slight local swelling results which closes the external openings of the sweat glands and thus for a time stops local perspiration. Eventually normal body processes reassert themselves and a further application of the astringent is required for continued checking of the perspiration.

Although aluminum chloride is effective, there are several disadvantages in its use. It may be extremely irritating to the user and it has a very marked disintegrating effect on fabrics that come in contact with it or with the skin to which it is applied. Other chemicals that have been suggested as substitutes include aluminum sulfate, aluminum acetate, aluminum hydroxide, and aluminum sulfocarbolate—but all of these have some other disadvantage. An attempt has been made to mitigate the possible irritation to the skin and the damage to clothing by incorporating these astringent drugs in pastes or creams. There is some doubt that this procedure entirely eliminates the danger of irritation to the skin, but according to at least one study, the creams as a rule are less destructive to clothing than the liquid anti-perspirants. Care should be taken to avoid applying an anti-perspirant containing an aluminum compound on the skin immediately after using soap and water; an insoluble aluminum soap may be precipitated that will cause irritation. Other precautions to be observed include:

- Avoid the use of an anti-perspirant immediately after shaving or using a depilatory.
- Allow the preparation to dry thoroughly before permitting the area to which it is applied to come into contact with clothing, and dust the area with talcum powder after it has dried.
- Use it as infrequently as practicable.
- Never use an anti-perspirant on the skin where there is a cut, abrasion, pimple, or other irritation.

Preparations that are intended only for use as deodorants are considered under the Food, Drug, and Cosmetic Act as cosmetics. Anti-perspirants or perspiration suppressors, whether they be in liquid, cream, or paste form are classified as drugs inasmuch as they act to affect or modify bodily functions. As drugs, their active ingredients must be declared on the label.

CR's Tests

To provide a basis for evaluating some of the many per-

spiration suppressors and deodorants on the market, CR had a number of well-known brands analyzed by a competent chemist analyst, and checked for their effectiveness and the possibility of their damaging fabric with which they may come in contact. No single product had the essential characteristics of the ideal anti-perspirant, elimination of perspiration odor, prevention of staining of clothing by excess perspiration, freedom from irritating action on the skin and deterioration of fabric. As a general rule, the products made in the form of creams containing astringents are considered to be moderately effective in inhibiting perspiration and to have the least irritating effect on the skin and the least potentiality of damage to fabric. All anti-perspirants in this test, however, had a somewhat acid reaction and might therefore have some unfavorable effect on certain fabrics.

Prices given do not include Federal excise tax. Figures in parentheses are prices per ounce avoirdupois (per fluid ounce for liquids except for *Perstop*) of the preparation, and afford a convenient means of comparing actual costs of the several brands. Ratings are cr45.

Anti-Perspirants

B. Intermediate

POWDER

Sno-Mist (The Phillips & Benjamin Co., Waterbury, Conn.) 2 oz., 49c. (25c) Essential ingredients: talcum, zinc stearate, boracic acid, and an oxyquinoline derivative, with perfume.

CREAM

Arrid (Carter Products, Inc., 53 Park Pl., New York 7) 1.05 oz., 59c. (56c) Essential ingredients: water, spermaceti, aluminum sulfate, and titanium oxide; faintly perfumed.

Etiquet Deodorant Cream (Distributed by Lehn & Fink Products Corp., Bloomfield, N. J.) 1 oz., 39c. (39c) Essential ingredients: water, titanium oxide, aluminum sulfate, in a stearate base, slightly perfumed.

Fresh Cream Deodorant (The Pharma-Craft Corp., Inc., 405 Lexington Ave., New York 17) .87 oz., 43c. (49c) Essential ingredients: water, aluminum chloride, aluminum formate, in a stearate base, perfumed.

Lor-Odo, Scentized, Underarm Deodorant Compact (Distributed by Parfum L'Orle, Inc., 6 E. 39 St., New York 16) .75 oz., 50c. (67c) Essential ingredients: white petrolatum, water, aluminum sulfate, zinc oxide, perfumed.

Lor-Odo, Men's. Essentially the same as *Scentized Lor-Odo*, except that aluminum sulfate content was slightly higher, water content slightly lower.

Stag Deodorant Cream for Men (Langlois, Inc., 43 Leon, Boston 43; distributed by Rexall Drug Stores) 1½ oz., 50c. (33c) Essential ingredients: water, aluminum sulfate, benzoic acid, in a stearate base, perfumed.

* * *

The following had certain characteristics that were considered undesirable; they were judged to merit a somewhat lower *B* rating.

CREAM

Ever-Dry (Ever-Dry Corp., 2113 San Pedro, Los Angeles 11) 1-1/5 oz., 45c. (38c) Essential ingredients: aluminum chloride, aluminum phenol sulfonate, aluminum sulfate, water, in a stearate base, perfumed.

Odo-Ro-No Cream (Distributed by Northam Warren Corp., 50 E. 57 St., New York 22) 1⅛ oz., 39c. (35c) Essential ingredients: ammonium aluminum sulfate, zinc sulfocarbolate, titanium oxide, glycerin, water, in a fatty base, perfumed.

LIQUID

The active ingredient of the following was aluminum chloride, present to the extent of less than 15%. They would be fairly effective as perspiration inhibitors; they were distinctly acid in reaction, and might cause discoloration of some dyed fabrics and disintegration of certain fabrics with which they came into contact.

Ever-Dry (Ever-Dry Corp.) 1¼ fl. oz., 45c. (36c)

Odo-Ro-No Instant (Distributed by Northam Warren Corp.) ¾ fl. oz., 39c. (52c) Also contained aluminum sulfate.

Perstop (Distributed by Carter Products, Inc.) ¾ oz. avoirdupois, 25c. (33c)

C. Not Recommended

LIQUID

Instant Dew (Distributed by Pearson Pharmacal Co., Inc., 9 Rockefeller Plaza, New York 20) 1 fl. oz., 25c. (25c) Contained aluminum chloride in aqueous solution, the amount being above 15%.

Nonspi (Distributed by The Nonspi Co., 113 W. 18, New York 11) 2 fl. oz., 49c. (25c) Essential ingredients: aluminum chloride, ferric chloride, and a sulfonated alcohol. Ferric chloride acts as a deodorant, but may discolor fabrics with which it comes in contact. A sulfonated alcohol is of doubtful value in an anti-perspirant.

Odo-Ro-No Regular (Distributed by Northam Warren Corp.) ¾ fl. oz., 39c (52c); 1⅛ fl. oz., 59c (36c). Contained aluminum chloride, in aqueous solution, in strength exceeding 15%.

Deodorants

The following preparations are effective in varying degrees in covering the offensive odor of perspiration, but do not interfere with its flow. If clothing is to be protected from perspiration stains, a product of this type will need to be used in conjunction with dress shields.

B. Intermediate

POWDER

Amolin (The Norwich Pharmacal Co., Norwich, N.Y.) 2 oz., 31c. (16c) Essential ingredients: boracic acid with a small amount of talc and thymol.

Quest (Distributed by International Cellucotton Products Co., 919 N. Michigan, Chicago 11) 2 oz., 31c. (16c) Essential ingredients: talcum, zinc oxide, and calcium carbonate.

B. Intermediate (cont'd)

CREAM

Amolin Cream Deodorant (The Norwich Pharmacal Co.) 1.9 oz., 49c. (26c) Essential ingredients: boracic acid and zinc oxide in what appears to be a petrolatum base, perfumed.

Hush Cream Deodorant (Distributed by Hush Sales Co., 114 Market, Philadelphia 6) 2¼ oz., 49c. (22c) Essential ingredients: zinc oxide, white petrolatum, perfumed.

Marvelous Cream Deodorant (Richard Hudnut, 113 W. 18 St., New York 11) 1½ oz., 55c. (37c) Essential ingredients: zinc oxide, benzoic acid, and white petrolatum, perfumed.

Mum (Bristol-Myers Co., 630 Fifth Ave., New York 20) 1.25 oz., 49c. (39c) Essential ingredients: zinc oxide, titanium oxide, and white petrolatum, perfumed. Cream considered somewhat heavy, and might be objectionable to some on that account.

Yodora (McKesson & Robbins, Inc., Bridgeport, Conn.) 2 oz., 49c. (25c) Essential ingredients: zinc oxide, boracic acid, sodium salicylate, and petrolatum, perfumed. Cream considered somewhat greasy and might be objectionable to some on that account.

LIQUID

Immac Lotion Deodorant (Distributed by Mystic Laboratories, Division of Affiliated Products, Inc., Jersey City, N. J.) 2 oz., 35c. (18c) Essentially an alcoholic solution of perfumes with a small amount of benzoic acid, and a very small amount of formaldehyde.

Park & Tilford Perfumed Deodorant (Distributed by Park & Tilford, 485 Fifth Ave., New York 16) 1¾ oz., 25c. (14c) Essentially an alcoholic solution of perfumes with a small amount of benzoic acid and a very small amount of formaldehyde.

Skippy Peanut Butter Tested Again

★ ★ ★ ★ ★ ★

PEANUT BUTTER is a sandwich spread that has been relatively plentiful in the past year. It has a high fat content, contains 26 percent vegetable protein, and is a good source of the B vitamins and phosphorus. It contains some vitamin A and is a fair source of iron.

Sometimes the oil in peanut butter separates out and accumulates at the top of the jar. The difficulty is easily remedied, as a rule, by screwing the cap of the jar on tightly, inverting it, and allowing the jar to stand upside down until the oil has become redistributed throughout the mass. Some manufacturers make a practice of hydrogenating a part or all of the peanut oil extracted in crushing the nuts and then return this hardened oil to the mix. The hydrogenation process has the effect of turning the oil into a fat that is solid at ordinary temperatures and thus of eliminating the separation difficulty. The keeping quality of the peanut butter is also improved when the oil is hydrogenated. The chief objection to the process from the nutritional standpoint is that linoleic acid, a most important element of the nutritive value of the peanut oil, is thereby destroyed. Peanut butter that has not had its oil treated by hydrogenation will therefore have somewhat higher food value.

The U.S. quality grades set for peanut butter are: U.S. Grade A (Fancy), U.S. Grade C (Standard), and Off Grade. In the March 1945 issue, CR reported ratings of 12 widely-distributed brands based on grading tests by a competent firm of consulting chemists. The listings of these 12 brands are repeated here, in abreviated form, for the reader's convenience.

A. Recommended

Beardsley's Grade A Peanut Butter. 24c a lb. U.S. Grade A. 1

Boscul Nutty Spread. 28c a lb. U.S. Grade A. 1

Beech-Nut Brand Peanut Butter. 33c a lb. U.S. Grade A. 2

Frank's Jumbo Brand Peanut Butter. 37c a lb. U.S. Grade A. 3

Peanut Crunch. 39c a lb. U.S. Grade A. 3

Planters Highest Grade Peanut Butter. 45c a lb. U.S. Grade A. 3

* * *

The following were rated somewhat lower in quality because of the presence of hydrogenated oil:

Heinz Peanut Butter. 34c a lb. U.S. Grade A. 2

Derby's Peter Pan Peanut Butter. 37c a lb. U.S. Grade A. 3

Skippy Chunk Style Peanut Butter. 39c a lb. U.S. Grade A. 3

B. Intermediate

Ann Page Peanut Butter. 25c a lb. U.S. Grade C. 1

Chunk-E-Nut. 26c a lb. U.S. Grade C. 1

C. Not Recommended

Skippy Creamy Peanut Butter. 39c a lb. Off Grade—somewhat rancid. 3

The rating of *Skippy Creamy* Peanut Butter was protested by Mr. J. M. Rosefield, Sales Manager of Rosefield Packing Co., Ltd., Alameda, Calif., manufacturers of this brand,

who wrote that the sample checked must have been a very old one. Mr. Rosefield further asserted that it was the company's policy to make good on complaints from consumers who purchased *Skippy* Peanut Butter that was found to be in bad condition. Indeed, he enclosed several outspoken complaints of such cases and copies of the company's replies which indicated that the purchase price of the particular jar in question had been refunded and a fresh jar of peanut butter shipped direct from the factory. CR offered to pick up new samples of the *Skippy* products for test if Mr. Rosefield would give assurance that the company would make refund whenever a consumer got a jar that was in bad order; this Mr. Rosefield readily agreed to. He further pointed out that the company had a new plant operating in Portsmouth, Va., and that shipments for the Eastern market were no longer being made from the West Coast.

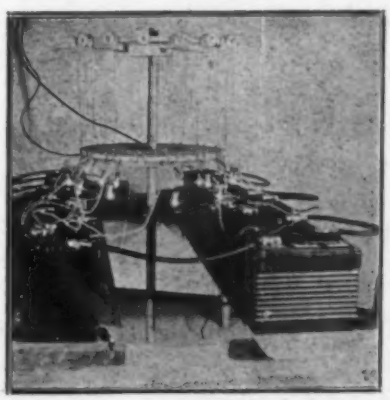
New samples of *Skippy Creamy* Peanut Butter and *Skippy Chunk Style* Peanut Butter were purchased in New York City by CR and forwarded to the firm of consulting chemists which carried out the earlier grading tests. The test report graded *Skippy Creamy* Peanut Butter as *Fancy* (U.S. Grade A) which would entitle it to a CR *A-Recommended* rating. (It should be noted the rating would be somewhat lower than was given to top-grade non-hydrogenated brands, since *Skippy* Peanut Butters, like several others tested, had had a part of their oil content modified by hydrogenation.) The sample of *Skippy Chunk Style* Peanut Butter, however, was found to be somewhat rancid.

In the light of Mr. Rosefield's promise to make good in such cases, the earlier rating of *Skippy Chunk Style* Peanut Butter has been left unchanged, but consumers in the East who would not wish to go to the trouble of making complaint in the event that they should secure an unsatisfactory product will do well to inspect the label before they buy any *Skippy* product and perhaps make their purchase only if the label indicates that the peanut butter came from the Portsmouth, Va., plant.

Automobile Storage Batteries

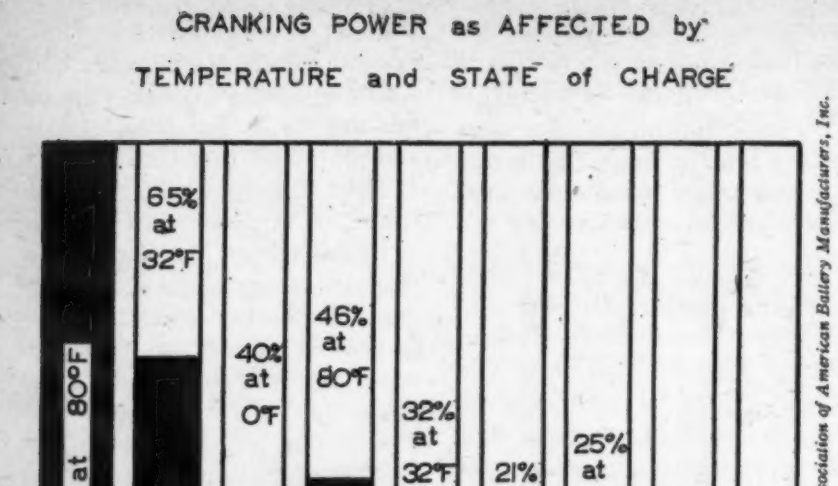
UNFORTUNATELY, automobile batteries usually fail without warning and the consumer anxious to get his car in operation again as quickly as possible will thus all too often be constrained to take whatever brand the nearest dealer or service station has available. The wise procedure is to obtain a rental battery, if possible, and use it until such time as a battery of the right make, type, and quality can be secured. This is only practicable, of course, when the battery failure has occurred in the vicinity of the owner's home town.

Batteries all look pretty much alike, but their performance varies over an astonishingly wide range, particularly under



Part of battery charge and discharge test set-up to determine performance of batteries under light load.

conditions of low temperature and heavy discharge, such as occurs in starting a car that has stood several hours or overnight in cold or sub-zero weather. Few realize the tremendous demands made upon a battery by a modern car; lighting may require about 16½ amperes, ignition 1½ amperes, heater and defroster 7 amperes, and radio 7½ amperes, or a total of 32.5 amperes, enough to discharge a first-rate new battery completely in 3 hours. In addition to this, starting in summer requires from 125 to 300 amperes and in winter 300 to 700 amperes. Most batteries if in good condition will perform well enough at the higher temperatures and low discharge rates. Almost any 100 ampere-hour battery should give a 5 ampere discharge for 20 hours, without difficulty, but at the high discharge rates only a first-rate battery (and de-



cidedly not all batteries of well-known and widely advertised makes) will "do its stuff" when the mercury hovers around and below the zero mark. Theoretically a battery rated at 100 ampere-hours should be able to operate continuously for 20 minutes a car's starter motor drawing 300 amperes, but in actual practice it will not come anywhere near to doing so—indeed a battery that can discharge 300 amperes for *4-1/2 minutes* at 0°F would be considered quite satisfactory for a 100 ampere-hour battery. There are several reasons for this reduced capacity at high rates of current delivery associated with turning the engine over rapidly for starting.

1. Sulphation on the surface of the plates closes their pores and greatly reduces their effectiveness.

2. The electrolyte does not have time enough to diffuse properly to all the points where chemical reactions must occur.

3. The internal resistance of the cells causes a loss of available voltage.

4. Due to temperature effect on the chemical and physical actions in a battery, the cranking power at 0°F of a fully charged battery is only 40% of that at 80°F. (The low temperature increases the viscosity of the acid and slows down its diffusing through the separators and into the plate pores, also slowing down the rate of chemical action.)

The power available for cranking is greatly affected, too, by the condition of the battery in respect to charge. The accompanying chart shows the power available from a fully-charged, a half-charged, and a nearly-discharged battery at 3 temperatures, 80°F, 32°F, and 0°F.

Care of Storage Batteries

Under present conditions of low mileage, intermittent and slow speed driving, car batteries must be watched closely if they are to give maximum service. This care will sometimes need to include an occasional service-station recharge to offset the lack of charging at the usual rate by the generator of the car, and, above all, addition of distilled water at frequent intervals to maintain the electrolyte at the correct level, which is *3/8 of an inch above the top of the plates.* The charging rate should be checked, for if the voltage regulator has been previously adjusted to operate with a poor battery the charging rate will be too high when a new battery is installed. This adjustment requires skill and experience and should be done only by a trained workman at an authorized service station properly equipped with special tools and instruments designed for voltage regulator adjustment. Keep the battery top clean by the use of a stiff bristle brush and ammonia or baking soda in water, washing off with clear water when deposits have been removed. (This treatment will be required only at relatively infrequent intervals.)

If clamp terminals are of lead coated brass, they should be cleaned and greased with mineral grease or vaseline. Lead alloy type clamp terminals should be scraped bright but grease or vaseline should *not* be used, according to the Association of American Battery Manufacturers. Finally, make sure the ground strap connecting the car to the battery is in

good condition, tightly attached and making good contact.

Buying Hints

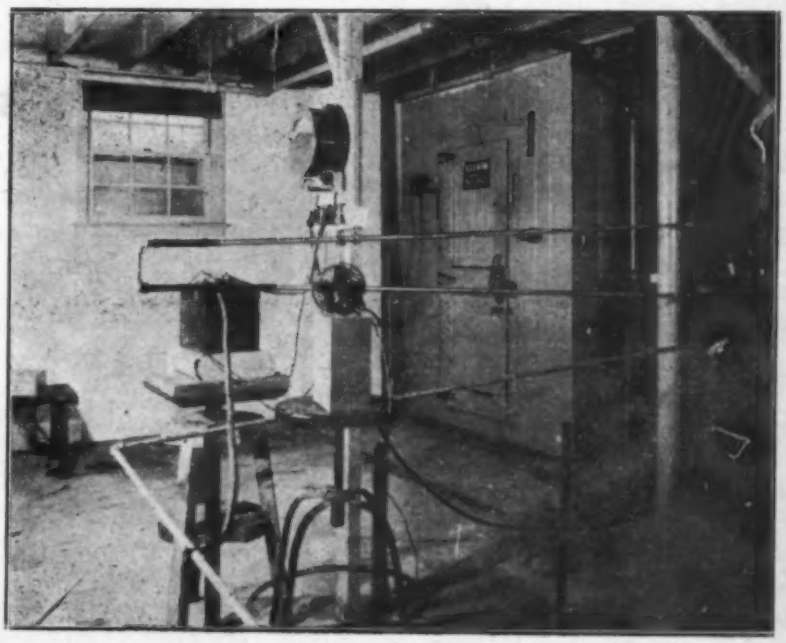
Wherever possible, in purchasing a storage battery give preference to a brand that gives complete information regarding its capacity, marked *plainly* and *permanently* on the case. This will include the number of plates per cell (usually 15 or 17) or the total number of plates for the 3 cells, the ampere-hours at the 20 hour rate (80, 100, and 120 are typical), and the number of minutes the battery will discharge 300 amperes at a temperature of 0°F before the voltage falls below 3 volts (this should be 3 minutes and 12 seconds or more). The polarity of the terminals should be marked permanently by raised letters POS or NEG, or both, on top of the case. A plus or minus sign, or a spot of bright-colored paint on the top of one of the lead terminals is not sufficient; such marks easily become obliterated or uncertain with use. If a battery is not clearly and permanently marked in such a manner when purchased, much future trouble can be eliminated if the consumer applies a prominent and permanent marking himself (taking care not to crack the case in doing so). If the battery terminals are not marked at all, measure the tops of the terminals with a pair of calipers. The terminal having the larger diameter will be the positive (it is usually about 1/16 in. larger in diameter than the negative). Be careful in handling calipers or any other metal tool about a battery so that they do not by accident come into contact with two terminals, or with one terminal and any metal part of the car.

Batteries which come with 12, 18, or 24 months' guarantee are more desirable than batteries which are not guaranteed, for in the event the battery fails before the guarantee expires, the purchaser receives a pro rata refund based on the difference between the number of months the battery was guaranteed and the number of months of service it has given. The cheapest batteries are produced at the cost of skimping of size and materials, and unless for a temporary and non-vital purpose, purchase of one of the lowest priced batteries or any battery of less than 100 ampere-hour capacity cannot be recommended. (An exception may be made for a car which is to be used only in summer months or in a warm climate; a less good battery will often serve when it is not to be subjected to the heavy load of cold-weather starting.)

In CR's tests several of the batteries did not have adequate basic information on the case and these included such well-known brand names as *Goodyear*, *Seiberling*, and *Prest-o-lite*. All the batteries measured up to their rated capacity of 100 ampere-hours but 4 batteries tested failed to meet the minimum requirement of 3.2 minutes for 300 ampere discharge at 0°F; three of the four failed by a surprisingly wide margin. The best battery in the test withstood a drain of 300 amperes at 0°F *for over 5 minutes*, whereas the poorest battery was good for only *1-3/4 minutes*. All batteries were of 100 ampere-hour rated capacity.

A. Recommended

Gold Medal Hi-Power, Sears-Roebuck's No. 28—113F. $6.75, plus freight. 17 plate. 24 months' guarantee. Important time, temperature, discharge data were not shown on case, as they should be. **2**



Part of the equipment used for the high-rate discharge test. Each battery was pre-cooled in cold room (seen in background) for 24 hours at 0°F. Voltage readings were taken at close time intervals as the battery "ran down" quickly under a heavy current drain simulating that associated with protracted use of the starter in very cold weather.

Gold Medal Powermaster, Sears-Roebuck's No. 28—126F. $6.50, plus freight. 15 plate. 18 months' guarantee. Important time, temperature, discharge data were not shown on case. 2

Goodrich Standard, Type 5-145 (B. F. Goodrich Co., Akron, Ohio) $10.95. 15 plate. Important time, temperature, discharge data lacking. 3

* * *

Performance of the following batteries was less good than the above in the high rate, low temperature discharge test.

Winter King, Montgomery Ward's No. 61—181F. $7.65, express prepaid. 17 plate. Guaranteed for 24 months, according to catalog, but no guarantee received with battery. See *Willard*. 2

Edison CM 1-15 (Thos. A. Edison Inc., Emark Div., Kearny, N.J.) $11.50. Polarity not permanently marked. Except for ampere-hour rating, lacked all basic information on case. Guaranteed to be replaced or repaired free of charge, except transportation, if failure occurs within 3 months or 3000 miles, after which adjustments made on a prorata basis for its guaranteed life. (No guaranteed life was stated on the guarantee form or on the battery itself, whence this would appear to be no guarantee at all, beyond the 3 month-3000 mile period.) 3

Exide Sure Start 151 (Exide Storage Battery Co., Philadelphia 32) $11.95. Polarity not permanently marked. 3

Ford (Ford Motor Co.) $11.75. 17 plate. Polarity not permanently marked. Important time, temperature, discharge data lacking. 3

Seiberling B-3518 (Seiberling) $11.95. Polarity not adequately marked. Except for ampere-hour rating, lacked all basic information on case, including manufacturer's name, which was indicated only by letter "S." (Identification of this battery as a *Seiberling* based on assertion of dealer from whom it was purchased.) 3

Willard SW-BH-100 (Willard Storage Battery Co.; Montgomery Ward's No. 61—194F) $11.95, express prepaid. 15 plate. Guaranteed for 15 months, according to catalog, but no guarantee sheet, slip, or card received with battery, hence consumer would have to rely upon catalog for establishment of his rights under the guarantee. 3

B. Intermediate

Atlas A-1 (Standard Oil Co. of N.J.) $9.95. 15 plate. 3

C. Not Recommended

The following failed by wide-margin to meet minimum specification requirement for high-rate, low-temperature discharge.

Firestone Standard S-152-F (The Firestone Tire & Rubber Co., Akron, Ohio) $11.45. 15 plate. 3

Goodyear Allweather, Type A215 HF (Goodyear) $11.45. 15 plate. Polarity not adequately marked, and lacked all basic information on case. 3

Prest-o-lite Mercury, Type M2F-15 (Prest-o-lite Battery Co., Inc., Indianapolis) $11.45. Polarity not adequately marked, and lacked all basic information on case. 3

Traces of Things In Relation To Life and Health—I

VARIETY in diet may mean not only the spice but even life itself. To understand this, one must visit the strange realm of traces of things. In this realm everything weighing over about one thousandth of an ounce is barred, and no quantity is too small to be admitted. Scientists have, relatively speaking, just stepped across the borders of this realm. There is so much unexplored territory left that amateur and professional guessers, equipped with rose-colored goggles, are having a field day predicting the effects on life and health of increased knowledge about traces of substances in our diet. Some of these guessers, backed by analogies with life spans versus maturation periods for animals, say that most people can expect to live to the overripe age of 130 years. One predictor points out that hallucinations from lack of traces of niacin (vitamin P-P) may impair a worker's ability as much as do the delusions from too much alcohol; that a person poisoned by pyruvaldehyde (from a vitamin B_1 deficiency) may be as inefficient as one poisoned by traces of lead. Some think that improved nutrition will eliminate most disease. Still others say we are going into an age in which there will be no gray-haired women and no bald-headed men.

For consumers who are daily eating, breathing, drinking, and touching these all-important traces of things, who are exposed to the lures of advertising for trace minerals, and, most important, who are sold foods which are not foolproof, a few facts should do no harm in this bouquet of predictions. The pharmaceutical sellers, prospecting in the field of those trace substances, the vitamins, have found that "Thar's gold in them thar pills."; they may find even more glittering the prospect of diluting one part of inexpensive trace-element

chemicals with ten thousand parts of water and telling the customer to dilute this product with five or ten parts of water (just to make him think he's getting a concentrated product).

An example of the patent medicine promoters' tendency to take quick advantage of the public's interest in trace substances, has been the marketing recently of pills containing fluorides, advertised with complete lack of scientific caution, as capable of *preventing tooth decay* "as proved by medical research." Such products represent an exploitation of the new public interest in the experimental addition of fluorides to water supplies in certain cities, as reported in our article on "Extra-Good Teeth in the North of Texas" in the July 1944 BULLETIN. The danger of casual dosing with such proprietary products is indicated by an analysis of fluoride tablets which revealed a wide discrepancy between the content as indicated on the label and the actual fluoride content as measured.

Iodine is an old friend in the field of trace elements. The ancient Greeks used burned sponges (which have since been shown to contain iodine) in the treatment of goiter. This knowledge and the discovery of the element iodine by Courtois in about 1811 led him and others to try salts of iodine in the treatment of goiter as early as 1820. Some good results were obtained. In 1895 Baumann showed that iodine is a normal constituent of body tissues including the thyroid gland and that the quantity in the latter is diminished in simple and endemic goiter. In 1915 Kendall isolated thyroxine from the thyroid gland; this chemical compound contains 60 percent of iodine.

The daily need for about 0.000014 gram (four ten millionths of an ounce) of iodine in the diet is very real and must be met in some way if health, and probably life itself, is to be preserved. One way in which this need has been met in some parts of the country where iodine is not present in the soil, thence in the food supply, has been the addition of traces (about 0.01%) of a salt of iodine to the table salt used for seasoning food. (There are differences of opinion regarding the desirability of this practice, and there have been wide differences in the actual amount of iodine found, on chemical analysis, to be present in commercial iodized table salts.) The reality of the need for iodine has been demonstrated many times but perhaps most convincingly with the school children in Akron, Ohio, where, in only five cases among over two thousand treated with small amounts of sodium iodide (a salt of iodine) was there any enlargement of the thyroid gland; five hundred of those not taking the iodide showed gland enlargement (goiter) in the same period. From this and many other experiments, it must be concluded that iodine is as much a required food component as is protein or vitamin B_1.

The fact that iodine and some other chemical elements are required only in traces has given rise to the expressions, "trace elements" and sometimes "minor elements." (The "minor" refers to the quantity required and not to their importance in the diet.)

The term "trace elements" was used as early as 1932 by Dr. Mary S. Rose. By 1939 it was in common use. It must be understood that the trace elements are neither more nor less important than the other nutritionally essential elements, as calcium, magnesium, nitrogen, carbon, etc., and the grouping is necessarily a somewhat arbitrary one. The essentiality of some of these elements was known long before they were called trace elements. The rational use of iron in anemia was developed in the nineteenth century; Marine and Lenhart, in 1911, reported the first clear evidence of the value of iodine in prevention of goiter. Now there are many scientists at work in this field.

Arguments with respect to the relative importance of the major food components (carbohydrates, fats, and proteins), the vitamins, and the minerals (including trace elements) are usually as fruitful as arguments concerning the relative importance of the three legs of that well-known stool. At present, the "profitable" tendency is to stress the importance of vitamins and minerals; from vitamin advertising one gathers the impression that the only requirements for good health are a daily multiple-vitamin pill, with perhaps a few "minerals" thrown in.

A diet entirely without iodine would probably always result in death, although this would be hard to prove since it would be almost impossible to remove all traces of iodine from the diet. A diet with some, but too little, iodine results in goiter. As the quantity is increased, goiter is prevented. Much more iodide added to the diet will produce a disease called iodism, characterized by atrophy of the glands, a cold in the head, frontal headache, emaciation, weakness, eruptions on the skin, etc.

What far too much iodine will do can be realized from the skull and cross bones on the iodine bottle in the medicine cabinet. This interesting sequence in the effect of varying the iodine content of the diet from zero to far too much, in going from probable death through ill health to good health, then ill health again, and finally back to death, holds not only for many of the trace elements, but also for some of the vitamins and perhaps for the major food components as well. This can be shown by the accompanying diagrams in which distance to the right indicates increasing quantities of the trace element (or perhaps other food component), distance upward represents increasing health. Figure 1 applies to most of the needed trace elements. A substance with a narrow range between deficiency and excess would have a diagram like Figure 2. A poison would have a diagram like Figure 3. It is necessary to have about the right amount of every needed food component in the diet for good health; a deficiency or an excess of any will cause ill health or death. The words "complete" and "balanced" can best describe a good diet. Not so long ago it was felt that perhaps the discovery of new substances to be added to the diet would revolutionize the science of nutrition and add decades to our span of life. Now it is more and more realized that improvements in nutrition will come *through knowledge of the proper balance to be maintained between the various food components*, and through learning what all the needed components are. The vital necessity for balance in diet has been demonstrated many times for animals and, even more spectacularly, for plants. In one instance, orange trees treated with an excess of boron to cure a boron deficiency developed a manganese deficiency, which was accentuated by lack of phosphates or excess of potassium. It was further found that a deficiency of either zinc or iron would mask the manganese deficiency. In animals, an excess of zinc may cause a deficiency of copper, because of an unbalance in the intake of trace elements. Then, with an insufficient copper intake, an anemia may develop. Apple trees have been found to require, among other elements, nitrogen, potassium, phosphorus, calcium, magnesium, boron, iron, manganese, and zinc. Moreover, a balance among these is essential to the

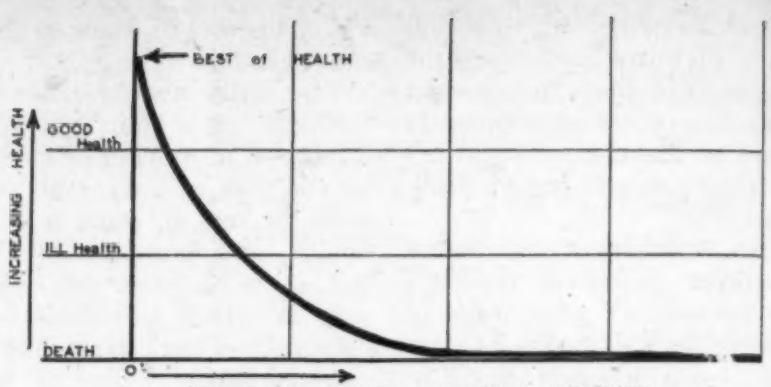


Figure 3

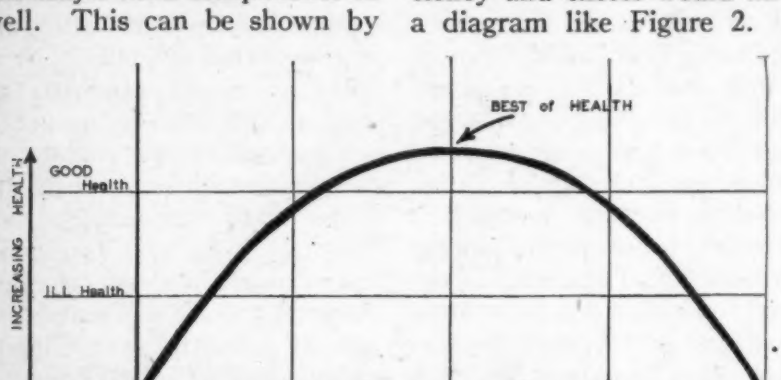


Figure 1

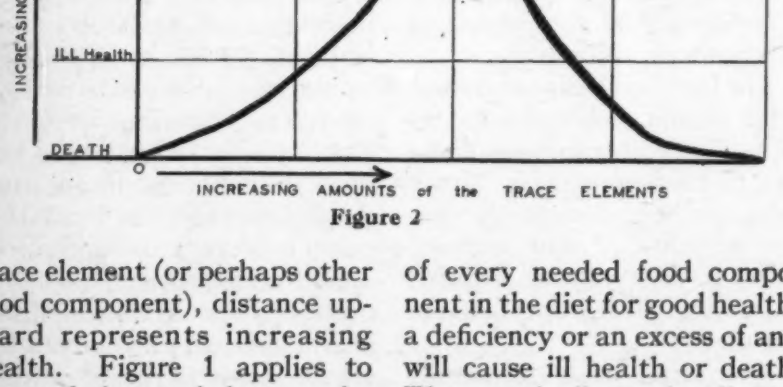


Figure 2

health of the trees. An excess of nitrogen may cause the tree to grow so fast that deficiency in the other elements, usually potassium, develops. An excess of phosphorus may also cause a potassium deficiency. An excess of potassium will aggravate a magnesium deficiency. Too much lime can cause deficiencies in potassium, iron, and manganese. All of these deficiencies are indicated by a diseased appearance of the leaves, fruit, and other parts, and, if not corrected, will make the tree worthless as a fruit producer and will probably kill it in time. The balance between too little and too much of one trace element is thus affected by the amounts of the other elements present; it is also affected by the kind of plant or animal and its age.

Among the dietary minerals required in quantities greater than traces is magnesium, an element coming into its own as an industrial metal. Young rats fed insufficient magnesium salts develop a disease characterized by excitability, convulsive seizures, disorders of the heart, kidneys, liver, and skin, and dilation of the veins. The disease finally leads to nutritive failure and death. Excessive use of magnesium salts taken as a laxative over a period of years has been reported to cause extremely fragile bones.

It is not yet known whether certain of the trace elements are required in animal nutrition; some of them are poisons. Molybdenum, an element used to alloy steel, seems to be required by some plants; it appears to be a poison for animals. Certain pastures in England contain too much molybdenum and are said to be "teart." Cattle grazing on this land develop severe diarrhoea

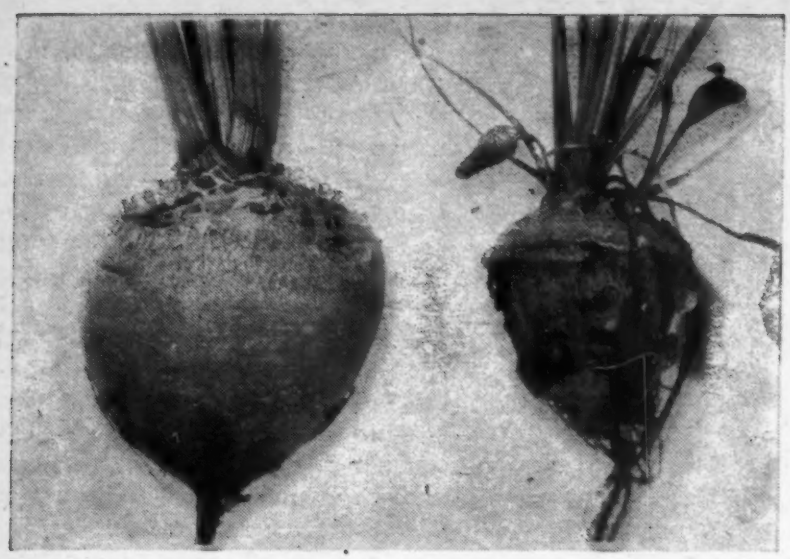
Illustration from Can. Dept. of Agric. Tech. Bul. 32
Figure I

This illustration shows results of magnesium deficiency of the soil on apple leaves. The top right-hand leaf shows the first symptom to appear, which is a yellowing beginning on the leaf margin and extending to the mid-rib. Progressive stages are shown in the top left-hand leaf, the middle leaf, the lower left, and finally the lower right leaf. In the last 3 stages of injury, large dead (brown) patches show up on individual leaves.

(scours); red cows become yellow and eventually die. This disease can be cured by feeding the cows one to two grams of copper sulfate per day or by transferring the animals to non-teart pasture; again, the interrelationship of different trace elements becomes apparent, as with the excess of zinc causing a copper deficiency, already mentioned. Liming the soil causes the pasture plants to absorb more molybdenum and become more teart; acidifying the soil has the opposite effect. With plants the problem is different, for treatment of certain soils with traces of molybdenum has increased the yield of several kinds of clover and rye grass. Tests with alfalfa on an iron-stone soil showed that traces of added molybdenum almost doubled the yield and changed the color of the leaves from a sickly yellow to a healthy dark green.

Cobalt, an element used in making powerful magnets and hard alloys, is an essential trace element. It has been studied especially in connection with blood formation in cattle and sheep; a deficiency in these animals is intimately connected with enzootic marasmus, coast disease, bush sickness, and Morton Main disease in New Zealand and Australia, nakuritis in East Africa, pine or pining disease in Scotland, salt sick or hill sick in Florida, and Grand Traverse disease or lakeshore disease in Michigan. Shortage of cobalt causes anemia, listlessness, loss of appetite, lethargy, weakness, and death. Horses and rats do not seem to be bothered with cobalt deficiencies. A relatively slight excess of cobalt causes polycythemia in many animals and man. Polycythemia is a disease characterized by an excess of the number of red corpuscles in the blood. In still greater quantities, cobalt salts are irritant poisons. Here again is the sequence of death, ill health, good health, ill health, and death, as the quantity of trace nutrient is increased from too little to too much.

These trace elements have been, for some time, factors of vital economic importance in agriculture. Florida citrus growers have been able to boost the yield per tree from a mere 100 pounds to as much as 1000 pounds, in exceptional cases, by the use of magnesium, iron, manganese, boron, and zinc along with the regular fertilizer elements. Trace elements have, thus, on the average, brought



Photograph by C. E. Wilson

From thesis of Oren Gum—Tenn. Corp and Ohio Agric. Exp. Sta., Cooperating

Figure II

Illustrating the effect of boron starvation in beets. The beet on the left was a "control" or normal plant.

Florida a three-fold increase in its biggest cash crop.

Whether fluorine is a trace element needed for life is a moot point; however, drinking water containing about one part of fluoride (salt of fluorine) in a million parts of water (1 ppm.) is reported to reduce the number of teeth normally decaying in people using the water by 50 to 65%. As the amount of fluoride in the water is increased, the protection against decaying teeth is increased, but at about 2 parts per million of fluoride, a disease called mottled enamel starts. In this disease, chalky white places and, in more severe cases, irregular, disfiguring brown stains appear on the teeth. The difference between one and two parts per million in protecting against decay and in producing mottling is so small that fluorides must be considered as one of the most critical of trace elements. Larger quantities of fluoride are thought to produce a deforming arthritis of the joints of the backbone causing it to become bent and rigid. In cows, excess fluorine (from superphosphate containing fluorine and fed as mineral supplement to the regular fodder, from hay contaminated by factory fumes, etc.) causes mottling of teeth, emaciation, thickened joints, decreased milk yield, sterility, and difficulty in walking. In even larger quantities, fluorides are deadly poisons; they are widely sold and used as effective insecticides, and in such use have caused many deaths of human beings through mistakes and accidents in handling.

Boron is an element most commonly met in borax (used in the laundry) and boric acid (found in proprietary eye washes). If boron is actually required for animal nutrition, very small amounts seem to suffice, yet for many plants it is a vitally important trace element. Sugar beets develop heart rot on some soils containing less than six ppm. "Corking" of apples, canker of beets, yellows of alfalfa, and scratch of celery are also caused by boron deficiency. A slight excess can retard plant growth or even kill the plant. Excess boron is also toxic for animals. A 1.5 percent solution of boric acid in a vial with a wick is an effective poison bait for German cockroaches. It is poison-

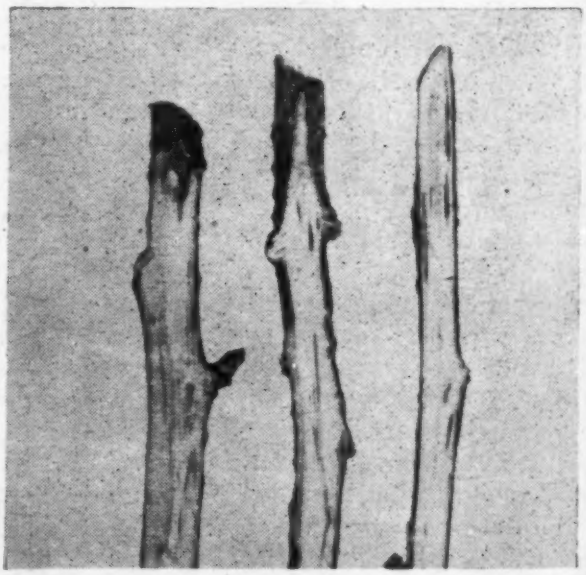


Illustration after Dr. A. B. Groves, Va. Agric. Exp. Sta., Winchester, Va.

Figure III

Boron deficiency in certain varieties of apple trees may cause pimples or blisters on the bark, which enlarge the following year. When these parts of the branches are cut, dead wood spots appear as seen in the dark streaks along the length of the branch.

ous for humans too; boric acid solution accidentally given to a number of infants in a hospital in this country a year or so ago resulted in their death.

Copper, the element so valuable for electrical conductors, is also a trace element; it is associated with iron in the formation of blood. Diets containing adequate iron and vitamin values probably also contain sufficient copper. In sheep, stringy wool is one of the first symptoms of copper deficiency; later symptoms are ataxia (failure of muscular coordination) and retarded growth. The fatal termination of copper deficiency in cattle is called "falling disease." Copper sulfate has been used to destroy algae in water supplies; in this use, it is attended with danger to the fish, as the extremely small proportion of one part in seven million of water will kill trout. Larger quantities of copper salts are poisonous to animals and humans too.

The anemia produced by a deficiency of iron in the diet is well known. Foods containing an abundance of readily available iron are used in the prevention and treatment of light cases of this disease. Plants deficient in iron become chlorotic (show yellowing of the leaves). The fact that the nutritional availability of a trace element varies with the food and its treatment, makes the total amount, as determined chemically, an unreliable guide to the usefulness of the food as a source of the element. In various types of molasses containing 3.2, 6.0, and 11.0 milligrams of iron in 100 cubic centimeters, the availability of the iron for nutrition has been reported as 97, 85, and 54%, respectively. The availability of iron varies from 100 percent for eggs to 24 percent for mutton. A dietary allowance of 12 milligrams of *available* iron per day is considered satisfactory.

Iron is one of the trace elements often found deficient in human diets. Women and children are most subject to anemia from shortage of this element. In Florida an extensive study has been made of the correlation between the soil of the community and anemia of the children there. Many of the children were chalky-faced, listless, and dull from the anemia. In the counties with deficient soil, 52 to 96% of the children were anemic; at most, 23% were anemic in places where soils were sufficiently rich to prevent cattle from being salt sick. In some areas none were anemic. The relation between anemia in children and salt sickness in cattle suggests that more than iron is involved; possibly a deficiency in cobalt and copper are as important in causing the anemia as is the shortage of iron. This study in Florida emphasizes the close relation between the nutrient supply of the soil and the health of the people living off that soil. *It also emphasizes the vital importance of variety in diet, especially when the local soil is known to be deficient in one or more elements.*

From U.S.D.A. Yearbook, 1938

Figure IV

The effect of the lack of copper, zinc, iron, and manganese on tobacco plants is shown. The first picture on the left and the third from the left in the bottom row show tobacco grown without a deficiency of these elements. The left-hand picture of the two at the top shows the results of a lack of manganese; the right-hand picture at the top shows poor growth due to lack of iron; the second picture from the left in the bottom row shows the effect of a deficiency of copper, and the fourth from the left, bottom row, effect of lack of zinc. Only 1/16 to 1/8 part per million of copper is required to prevent the stunting effect.

★

Ferromanganese or other manganese compounds when breathed as a dust or eaten in small quantities are poisonous. H. Voss has given a thorough description of the changes in bone marrow and the peripheral nervous system in chronic manganese poisoning—caused by too much of this metal or its salts. *Traces* of manganese salts are essential food components. Manganese, in very small amounts has been found to have a favorable effect on growth of rats and mice. Rabbits on a diet deficient in this element plucked one another's fur and ate it. Rats on a similar diet liked to eat wood, cork, thread, etc., and licked the metal of the cage; when kept on a manganese-free diet for a long period, they ceased to grow and eventually started dying. Seven to ten ppm. of manganese are reported adequate for swine. The quantity of manganese

found in foods varies from 44.4 milligrams per kilogram for blueberries to 1 for animal tissues. Cereals are said to be the best source in the American diet. If the diet contains considerable amounts of cereals, fruit, vegetables, and iron, a deficiency of manganese is unlikely. The effect of widely varying quantities of this element on the same animal has been demonstrated for tadpoles; manganese chloride, in a dilution of 1 part to 5000 kills; 1:10,000 to 1:50,000 retards growth; and 1:100,000 to 1:1,000,000 *favors* development.

Arsenic, lead, and selenium are trace elements which have not been proved essential to health. In fact, it is highly probable that these three elements, known to be poisonous in very small quantities, along with many others of the 92+ elements will be proved non-essential even in the most minute traces. So far as we know now, almost everybody gets too much lead. Consumers' Research has repeatedly warned of the dangers of this element in foods (mainly from insecticidal sprays), leaded gasoline, lead paints, certain colored crayons, and some drinking waters passing through lead pipe. There are also the hazards of breathing lead-containing dusts from lead pigments, from exhaust gases of automobiles using leaded gasoline, etc. Lead poisoning is one of the most frequent kinds of poisoning and is usually connected with occupation of the sufferer. Painters and workers in storage-battery factories have been frequent victims.

Selenium (an element used in rectifiers and photoelectric cells) is the cause of alkali disease or blind staggers in livestock, largely in certain sections of the West. It causes depressed growth, loss of hair, and abnormal hoofs. In poultry, it causes production of eggs with impaired hatchability. Certain plants have the ability to extract selenium from the soil and concentrate it in their tissues. *Astragalus racemosus* (a weed which thrives on selenium-bearing soils and appears not to grow elsewhere) is stimulated by 0.33 to 9 ppm. of selenium salts in the nutrient solution in which it is grown. Since cereals, like wheat, tend to extract the element from the soil, wheat grown in known seleniferous areas should not have been permitted to be utilized for the making of flour and other foods and feeds. Other plants, as *Astragalus crassicarpus* are poisoned by selenium salts in concentrations as low as 0.22 ppm.

Photograph by A. O Alben, U.S.D.A. Bu. Plant Ind.
Figure V

Illustration of a pecan tree grown on a zinc-deficient soil. The healthy foliage and limb on the upper left treated with a solution of zinc sulphate, show the effect of feeding zinc to a zinc-deficient tree.

★

Arsenic plays such an important role in the murder mysteries of the movies and fiction that its poisonous properties need no mention; in certain chemical compounds it constitutes a most valuable cure for syphilis. Although it is found in the healthy body, its role there, if it has any, is undetermined as yet. Arsenic tolerance can be developed and some peoples, notably some Tyroleans, have made a practice of eating arsenic oxide. This practice is unfortunate, not alone because of the hazards involved, but also because it is habit-forming and because of the possible relation to development of cancers.

Zinc (the element in the coating of galvanized iron) is another essential trace element in animal nutrition. Animals reared on diets freed from zinc do not grow normally, have lower zinc content of the body, have poorer digestive ability, etc. One of the functions of this element seems to be in aiding the body get rid of carbon dioxide through the lungs. There also is some relation between the action of insulin and zinc in the body. Baby mice on a zinc-free diet do not thrive, become thin, emaciated, lose hair, and live an average of only 17 days. Those having the same diet, but with the addition of traces of zinc, survive an average of 64 days. Since the values for the zinc content of plants fluctuate so much, milk seems to be the most dependable source of zinc for the human diet. A quart of milk a day and liver once or twice a week will supply the normal daily amount of about 15 milligrams. Larger quantities of zinc are poisonous. Brass-founders' ague is caused by breathing zinc fumes. In apple and pecan trees, a zinc

deficiency causes "rosette"; "little leaf," "mottled leaf," and "yellows" are other similar diseases in plants. Larger quantities kill. Thus 0.4 ppm. of zinc will destroy Peking soybeans while one fourth as much, or 0.1 ppm., favors good growth.

As more work is done on the subject of trace elements, the list of required ones will doubtless increase. Some of the more likely candidates for inclusion in the list are: Bromine, which may have some relation to the pituitary gland; aluminum, found in all plants and animals; chromium, a stimulant for plant growth; molybdenum, found in all animals from sponges to mammals; vanadium, found in tissues of representative species from all animal phyla and in all plants; and nickel, which is usually associated with cobalt and iron in nature.

One may wonder how he has ever managed to keep alive while eating his way through life blissfully unmindful of the Scylla of deficiency on one hand and the Charybdis of excess of all these various chemical substances on the other. There are several possible reasons that account for our not hearing of people who suffer from deficiency or unintentional excess of these trace elements, such as cobalt and copper. Probably the main one is that we try to avoid eating food products from sick plants and animals; this inherited or instinctive selectivity results in the elimination of food sources noticeably deficient in, or suffering from excess of, most of these elements. (However, certain poisonous elements, as lead and selenium, may be found —without warning—sufficiently concentrated in plants to be a serious hazard to livestock and man. Some seleniferous lands have so poisoned the vegetation that neither man nor animals can grow and thrive upon the produce of such soil, and animals that do subsist on such feed or forage are often malformed or altered in bodily structure and function.)

Another reason is the variety of our dietaries; the deficiency or excess of a trace element in one food is usually more or less compensated by the opposite variation of the same element in other foods. Still another reason is that symptoms of these deficiencies and slight excesses in human beings are not known, for many of the elements. This makes diagnosis from symptoms impossible; diagnosis by chemical analysis is too costly to be employed on a random basis, or on mere suspicion. It is very probable that, with continued research, deficiencies of more and more of these trace elements will be tied in with symptoms of disease or obscure illness we have known for years but of which no one has previously known the cause. With plants this situation is reversed; deficiency is common rather than exceptional with them, since they cannot change their source of nutrients or derive sustenance from soils other than those in which they grow. Livestock are considerably more limited than is man in their diets; if the pasture on which they feed is deficient in cobalt, copper, or iron, the animals, without dietary supplements, will almost certainly suffer from deficiencies in these elements, and their flesh (or milk, or eggs) will be deficient as food for human beings.

From all of this it would appear that the safest diet is the most varied diet—varied not only with respect to kind of food, but also with respect to locality from which the same foods come. Potatoes from Maine and Idaho, and citrus fruit from California, Florida, and Texas probably should all find place, in turn, in the well-planned dietary of people living in many parts of the country, particularly on the well-leached soils of the seaboard where many types of nutrients for plants and animals have been lost by the continual removal of soil substances with heavy rainfall, as pointed out in Professor Albrecht's article in the September 1945 issue of CR's BULLETIN.

There are important indications in this regarding the general choice of diet: The person who eats a restricted, monotonous, or freak diet, or who is too finicky about the variety of foods he eats is playing with a time-bomb which, unless he is lucky in the place where his food comes from and the character of its soils, is pretty certain to damage his health or worse. The meat-corn-meal-molasses monotony which has been the cause of pellagra and the curse of the poor in the South is an extreme example of what is to be avoided. Any visionary plan of determining what is the correct amount of every needed element in the diet and supplying this "ideal" diet, would be entirely too costly at present—even if we knew all of the needed elements. A good diet should avoid traces of contamination by microorganisms and their toxins, as well as by poisonous elements such as lead, arsenic, selenium, and such extraneous substances as food dyes and preservatives. (If a food is so poor that it must be dyed to make it sell, it is too poor for inclusion in the diet.)

Strictness on these points has been found to pay big dividends

in health. A good diet should be varied, not only as to variety of food, but also as to place where the food is produced, except for those fortunate few millions of Americans who live on a diet of foods native to their own soils and whose soil at the same time happens to be one of those still rich in all or nearly all of the vital food substances. Meat is an especially important "balancer" in the diet if the various cuts as well as edible organs are included in reasonable proportions, since the animal supplying the meat *must* have succeeded in maintaining a fairly strict balance of the various trace elements in order to have survived and remained in sufficiently good health to be acceptable for human consumption. (*To be concluded in the November issue.*)

Notes on Photographic Paper
Salvaging Old Paper—Softening Hard Paper

AMATEURS are not alone in their inability to obtain paper, for one photographic trade journal reports that professional finishers are scraping the "bottom of the barrel." To help them, one of the photographic trade associations suggests a method by which outdated paper, which has been lying on the shelf for as long as three or four years and which when developed shows foggy or grayish whites, can be reclaimed and used successfully.

As many amateurs will have a certain amount of outdated paper on hand, our readers may find the method worth a trial. Mix 29 grains (1.88 grams) of benzotriazole[1] in 1 quart of water. One oz. of this solution is added to each quart of ready-to-use developer in which the outdated paper is to be processed. Those who prefer to, may try the proprietary product *Edwal Orthazite*, "The original Benzotriazole Restrainer" (The Edwal Laboratories Inc., 732 Federal St., Chicago 5), which sells at 95c for a 1-oz. bottle said to be sufficient to treat 40 gallons of developer. Tests with unexposed strips of fogged *Velour Black DL-11* chlorobromide paper indicated that the full 3 oz. per qt. of 1% *Orthazite* was required to effect a cure, although the fog was light. The results obtained will depend upon the degree of fogging.

It was found in the tests that a *Velour Black* print developed in D-72 plus a low concentration of *Orthazite* was more contrasty than a print on paper from the same package developed in D-72 plus a higher concentration of *Orthazite*. This would indicate that the paper was not uniformly fogged, either as between different sheets or over the full surface of any one sheet. This unevenness of the latent fog image of course presents an important practical problem in any attempt to save long-out-dated paper; quite likely, the method will on this account prove to be unworkable in many cases. *Orthazite* was found to work satisfactorily on fogged chloride paper. It is interesting to note that the manufacturer does not claim his product to be infallible, for he states that "Out-dated paper [is] often made usable with Edwal Orthazite." He does, however, make the definite claim that it "Produces rich blue-black prints, prevents stain and fog [and] prolongs developer life."

* * *

While normal grades of paper are practically unobtainable, some stores do have a certain limited amount of paper available in the hard, contrasty grades. Photographic Trade News and National Photographic Dealer have suggested using a special developer with hard paper to obtain softer prints of normal contrast from normal negatives, or for softening down the contrast from negatives of any degree of contrast. Tests by CR, however, using contrast grades of *Convira* (a chloride paper) and *Kodabromide* (a bromide paper) failed to show marked decrease in contrast as a result of using this developer.

Note that this formula is for decreasing contrast; so far as is known, there is no successful method for *increasing* contrast, that is to make soft paper harder.

Water	75 ounces (2200 cc.)
Elon	150 grains (9.7 grams)
Sodium Sulphite	2½ ounces (70 grams)
Hydroquinone	150 grains (9.7 grams)
Sodium Carbonate	300 grains (20 grams)
Potassium Bromide	225 grains (15 grams)
Borax	900 grains (60 grams)

[1] Obtainable from Eastman Kodak Co.

★ ★ Corrections and Emendations to Consumers' Research Bulletins ★ ★

Commercial Vitamin Combinations
Col. 227-234
ACB '44 -'45

As noted in this article, prices were compiled in January 1944; there have been marked downward trends in prices of vitamin preparations subsequently. The reductions are probably due to the lower costs of bulk vitamins to the tablet and capsule manufacturers resulting from developments of new processes for production of synthetic vitamins and to some threats which have been heard that the governmental agencies might have to step in to break up price-fixing monopolies effective in this field. A brief survey recently conducted indicates that the retail price reductions have ranged from nothing (in the case of one or two brands) to a maximum of about 50% in some other cases, with average reductions of about 30%. The intending purchaser must also bear in mind that any of the products may sell at different prices in the same city on the same day in different stores. Thus *Dayamin* was found priced in New York City stores at $6.95 and $4.95. (The price recorded in January 1944 for this brand was $7.74.)

In view of the several dollars difference which may be found in price per 100 of vitamin tablets and capsules, the consumer who has actual need to purchase vitamins in tablet or capsule form (and such persons are few) would often be well-advised to ascertain the price of several brands meeting requirements in two or three stores before deciding on a purchase.

Lux Soap Flakes

Lux soap flakes, recently analyzed, can now be added to the list of "Flake, Chip, and Bead Soaps with Builders and Fillers" on pages 25 and 26 of the article "Wartime Laundry Soaps" in CONSUMERS' RESEARCH BULLETIN of December 1944.

These flakes fall in this group because of the 6.1% builder content, a relatively low percentage for soaps in this class. (Some soaps contain 6½ times as much.) The content of inert substances, or filler, was found to be exceptionally low. (Builders are alkaline substances that increase the detergent action of soap but which when present in excessive amounts can be very hard on the hands; fillers are useless cheapenersor"make-weights.")

A. Recommended

Lux (Lever Bros. Co., Cambridge, Mass.) 12½ oz., 23c. (32c per lb. actual soap content.) Made chiefly of tallow; contained the least amount of builder (6.1%) of soaps in this group. Exceptionally low in water-insoluble matter or filler (desirable). Price especially high for this type of soap, but quality best of soaps in this group. **3**

Off the Editor's Chest

[*Continued from page 2*]

there have been and still are subsidies on certain food items, making their marketing possible even at selling prices below actual costs of production and distribution. The lower prices for food are therefore in some cases fictitious because the taxes paid to achieve apparent low costs make prices higher than they seem, a fact not readily apparent to the consumer unversed in the higher—or at least newer—economics. One state secretary of agriculture has conservatively estimated that government subsidies, i.e., the consumer's tax outlays, have been paying for an extra 2 cents on the price of every quart of milk and as much as 10 cents a pound on every pound of butter. For other commodities, such as chicken, the ceiling price has been merely an entry printed on a form, since the only price at which chicken could actually be obtained in the market or even at the farm was considerably higher than that set by the regulation-writers for poultry.

Just why a government agency should want to achieve low prices at the cost of having no goods to buy is a little hard for people of good will and good sense to understand. It might be noted, however, that the English economist, J. M. Keynes, and his followers are reported to attach major theoretical importance to the development of "social controls" over consumption and investment. Lord Keynes, himself, has been reputed to have had considerable influence in our nation's capital.

Quite in keeping with the Keynesian doctrines, one former OPA official has suggested that the OPA's data on cost-price-profit ratios and trade practices if continued into post-war years might provide "the basis for obtaining a realistic sense of the dynamic role of price changes and price interrelationships in directing resources toward their most productive uses and in influencing the total amount of employment, production, and income in the economy." All of which is a discreet, professional-economist's way of saying that the OPA can be used as a device for deciding in effect who shall make and who shall sell what.

It is not hard to see that unless consumers can be frightened by the horrendous picture of disastrous inflation, Menacing Economic Crisis No. 102, or thereabouts, into supporting a continuation of OPA controls, such a pro-

gram will die a natural and deserved death. Economists and business experts well know that the effective weapon with which to combat inflation is abundant production and untrammeled distribution of goods. We have in this country an enormously expanded plant capacity due to the magnificent and highly competent tooling up for war production, and, judging from newspaper reports, there is now a rapidly increasing and quite large number of unemployed workmen. There is also a large potential demand for automobiles, washing machines, radio sets, vacuum cleaners, farm equipment, plumbing supplies, and hundreds of other necessary and staple items that have been off the market during the war. Whether we get them or not in short order, as soon as they might be made to roll off the factory assembly lines, depends somewhat on whether consumers refuse to be taken in by the specious reasoning of the governments' more articulate economists that if their price control policies are not supported, we are heading straight toward economic disaster.

No consumer likes to pay higher prices for anything, but to expect to be able to buy the opulent variety of typically American commodities at the prices paid in the days before we incurred the costs of the most devastating war in history is to exhibit a belief in an economic Santa Claus that is not a normal characteristic of adults. If it becomes clear generally, as it now seems to many observing persons, that the underlying motive of the coterie of experts who generate the ideas in OPA is to direct the production of consumers' goods into channels that their policy-making officials consider to be "socially desirable," or best suited to manipulation of the policies and goals of managers and workmen in industry, Congress should and will make short shift of the entire agency at the earliest possible moment. The war is over and won by the valor of our military forces and the boundless skill and managerial abilities of men in our factories and mines, and on our farms; it is no longer in order to act as though there was a war to be won and people still to be "pushed around" in bringing that gigantic and unified effort to an early and successful conclusion.

Abridged Cumulative Index of Previous 1945 Issues Consumers' Research Bulletins

	Month and Page
Anti-tarnish preparations†	June, 24-25
Baby oils†	May, 11-12
Batteries, flashlight, rechargeable†	Aug., 21-22
Beans, baked†	July, 7-8
Beer and ale, vitamin content	Sept., 4
Bouillon cubes and broth extracts†	Mar., 21-23
Canned vegetables and fruits†	Apr., 10-16
Canners, pressure†	May, 5-11
Cementing materials, household†	Aug., 15-16; 30
Cereals, breakfast, vitamin content†	May, 21
Chocolate, baking, and a chocolate syrup†	May, 16-17
Cleaners, household (Penetone, Dri-Kleen, Evershine, Rad)†	Sept., 12, 25, 30
Cleansers and detergents, fabric and rug†	July, 21-23
Closets, cedar-lined	Sept., 4
Cola drinks†	June, 9-10
Corrections and emendations to CR Bulletins†	Jan., 24; Feb., 31; Mar., 11; May, 25
Diet, reducing, it is not necessary to be fat†	Sept., 21-23
Dog feeding and dog foods	Jan., 15-17†; Feb., 30
Dust cloths, home treatment	Sept., 4
Editorial	each issue, page 2
Engines, overpowered auto	Sept., 17
Film, photographic	Jan., 22-24†; Feb., 14-15†; Apr., 25; June, 21-22†; July, 16-21†
Army surplus†	Aug., 17
hypersensitizing process†	Sept., 23-24
Food, colors for, and colored†	June, 11-14
quality from the soil	Sept., 14-17
Gifts, overseas Christmas	Sept., 29
Gloves, women's fabric†	Mar., 5-7
Hats, men's felt†	Apr., 8-10
Hosiery, women's, treating preparations†	June, 23-24; Sept., 13-14
Housing, how much to pay	Jan., 5-9
prefabricated†	Mar., 16-21
Irons, new electric†	Feb., 5-9; Apr., 16-18
Jams, preserves, jellies and marmalades†	Sept., 18-21
Linoleum, care of†	May, 22-24
lacquers and varnishes†	Jan., 18-20
Mildew-proofing agents†	July, 11-15
Moth-treating product, ineffective (Des-Tex Foam)†	Sept., 30
Motion pictures†	each issue
Nipples, rubber, nursing bottle†	Sept., 10-12
Observation Post†	each issue, page 3
"Odor dispellers," new†	Apr., 20-22
Olives, canned ripe†	Aug., 9-10
Ovenware, glass†	July, 5-6
Peanut butter†	Mar., 12-13
Pencils, colored leads for, and colored†	Aug., 24, 31
Phonograph records†	each issue
Raincoats, girls' and women's†	Apr., 5-8
men's†	Mar., 8-11
"Refrig-O-Master"†	Apr., 22-23
Rugs, Oriental†	Feb., 15-18
Shoe trees, men's†	Mar., 13-16
Shoes, men's dress†	Sept., 5-10
Silver polishes and cleaners†	May, 18-21
Socks, men's†	Aug., 5-8
Stop-leaks, automobile radiator and house-heating boiler†	Aug., 18-20
Sunburn preventives†	July, 9-11
Teeth, effects of acids in foods on	Aug., 11-14
Thermometers, clinical†	June, 19-21
Tomato juice†	Jan., 12-14
Toothbrushes†	June, 5-8
Toothpaste, Ipana†	Aug., 3
Utensils, aluminum cooking, unfair sales tactic†	Sept., 3
Vitamins and vitamin preparations	Jan., 3, 12-14; Feb., 3-4†; Mar., 4; Apr., 3; May, 21; Aug., 4, 20-21; Sept., 4, 30
Washing powder for diapers (Diaperwite)†	Sept., 25
Waxes, floor†	May, 13-16

†indicates that listings of names or brands are included.

Sterilization of Baby Supplies

It obviously isn't possible to sterilize *everything* the baby puts into his mouth, as it was suggested should be done, in the opening sentence of the report on "Rubber Nipples for Nursing Bottles" that appeared in CR BULLETIN for August. As a maternal health expert to whom the article was submitted for criticism pointed out, what would you do about Baby's thumb? Certainly his clothing will not be free from every sort of bacterial life—although it should of course be clean. It is, however, important to have nursing bottles, nipples, and formula sterile, for milk is an ideal culture medium for disease-causing microorganisms.

It was also suggested that as soon as the rubber of a nipple becomes soft or gummy, it should be discarded, because it is apt to collapse in use so that milk will not pass through. (As our printing schedule was somewhat disorganized last month because of the two-day victory holiday and vacation schedules, it was not possible to include these suggestions and comments in the article on Rubber Nipples before it went to press.)

Ratings of Motion Pictures

THIS section aims to give critical consumers a digest of opinion from a number of reviews, ranging from the motion picture trade press to Parents' Magazine, which rates motion pictures not only on their quality as entertainment but on their suitability in various aspects for children.

It should be emphasized that the motion picture ratings which follow do not represent the judgment of a single person but are based on an analysis of the reviews appearing in some 19 different periodicals. (See January 1945 issue for the sources of the reviews.)

The figures preceding the title of the picture indicate the number of critics who have been judged to rate the film A (recommended), B (intermediate), and C (not recommended).

Audience suitability is indicated by "A" for adults, "Y" for young people (14-18), and "C" for children, at the end of each line.

Descriptive abbreviations are as follows:

adv—adventure
biog—biography
c—in color (Technicolor or Cinecolor)
car—cartoon
com—comedy
cri—crime and capture of criminals
doc—documentary
dr—drama
fan—fantasy
hist—founded on historical incident
mel—melodrama
mus—musical
mys—mystery
nov—dramatization of a novel
rom—romance
soc—social-problem drama
trav—travelogue
war—dealing with the lives of people in wartime
wes—western

A	B	C		
—	2	2	**Abbott and Costello in Hollywood**	*com AYC*
—	2	4	**Adventures of Rusty**	*dr AYC*
—	12	5	**Affairs of Susan, The**	*com A*
1	11	3	**Along Came Jones**	*wes AYC*
4	8	—	**Anchors Aweigh**	*mus-com-c AYC*
—	5	1	**And Then There Were None**	*cri-mys A*
—	3	1	**Arson Squad**	*cri-mel AYC*
—	10	1	**Back to Bataan**	*war-dr A*
—	4	5	**Beautiful Cheat, The**	*mus-com A*
—	5	8	**Bedside Manner**	*com A*
6	6	2	**Bell for Adano, A**	*war-dr A*
—	6	—	**Bells of Rosarita, The**	*mus-wes AYC*
—	7	10	**Betrayal from the East**	*war-mel A*
—	6	7	**Between Two Women**	*dr A*
—	5	8	**Bewitched**	*dr A*
—	2	2	**Beyond the Pecos**	*wes AYC*
—	3	7	**Big Bonanza, The**	*wes A*
—	3	5	**Big Show-Off, The**	*mus-com A*
—	2	6	**Blonde from Brooklyn**	*mus-com A*
—	—	7	**Blonde Ransom**	*mus-com A*
1	12	1	**Blood on the Sun**	*war-mel A*
—	12	3	**Body Snatcher**	*cri-mel A*
—	2	5	**Boston Blackie's Rendezvous**	*mel A*
—	1	2	**Both Barrels Blazing**	*mus-wes AYC*
—	11	3	**Brewster's Millions**	*com A*
—	9	4	**Brighton Strangler, The**	*cri-mel A*
—	12	3	**Bring on the Girls**	*war-mus-com-c A*
—	2	10	**Bullfighters, The**	*com A*
5	5	3	**Captain Eddie**	*biog-dr AYC*
—	3	3	**Captain Kidd**	*mel AYC*
—	4	6	**Caribbean Mystery, The**	*mys-mel A*
—	—	5	**Castle of Crimes**	*mys-mel A*
—	6	4	**Cheaters, The**	*dr AYC*
—	2	5	**Chicago Kid**	*cri-mel A*
—	7	8	**China Sky**	*war-mel A*
—	4	4	**China's Little Devils**	*war-mel A*
—	6	7	**Christmas in Connecticut**	*com A*
—	6	5	**Circumstantial Evidence**	*cri-mel A*
—	1	4	**Cisco Kid Returns**	*wes AYC*
1	14	1	**Clock, The**	*war-rom A*
—	—	—	**Col. Blimp (See Life and Death of)**	
2	9	3	**Conflict**	*cri-mel A*
5	5	6	**Corn Is Green, The**	*dr A*
—	2	1	**Corpus Christi Bandits**	*wes AYC*
—	10	6	**Counter-Attack**	*war-dr A*
—	—	3	**Crazy Knights**	*cri-mel AYC*
—	5	4	**Crime Doctor's Courage, The**	*mys-dr A*
—	5	3	**Crime, Inc.**	*cri-mel AYC*
—	2	3	**Dangerous Intruder**	*cri-mys A*
—	3	1	**Dangerous Partners**	*mel A*
—	2	6	**Dangerous Passage**	*mel A*
—	1	2	**Dawn Over France**	*hist-dr A*
—	5	8	**Delightfully Dangerous**	*mus-com A*
1	11	4	**Diamond Horseshoe**	*mus-com-c A*
—	7	8	**Dillinger**	*cri-mel A*
—	3	2	**Divorce**	*dr A*
—	3	3	**Docks of New York**	*cri-mel AYC*
—	5	10	**Don Juan Quilligan**	*com A*
—	5	5	**Double Exposure**	*cri-com A*
1	5	—	**Duffy's Tavern**	*mus-com A*
—	5	6	**Eadie Was a Lady**	*mus-com A*
—	6	7	**Earl Carroll Vanities**	*mus-com A*
—	2	4	**Easy to Look At**	*mus-com AYC*
3	6	5	**Enchanted Cottage, The**	*dr A*
—	2	1	**Enemy of the Law**	*mus-wes AYC*
—	2	9	**Escape in the Desert**	*war-mel A*
—	3	4	**Escape in the Fog**	*war-mys A*
—	3	4	**Eve Knew Her Apples**	*mus-com A*
—	1	6	**Falcon in San Francisco**	*cri-mys A*
—	1	5	**Fashion Model**	*cri-mel AYC*
—	—	4	**Fatal Witness, The**	*cri-mel A*
—	4	3	**Fighting Guardsman, The**	*adv A*
12	3	—	**Fighting Lady, The**	*war-doc-c AYC*
—	11	4	**Flame of Barbary Coast**	*mus-mel A*
—	1	2	**Flame of the West**	*wes A*
—	4	2	**Fog Island**	*mys-mel A*
—	3	2	**Follow That Woman**	*cri-mel A*
—	5	7	**Frisco Sal**	*mus-dr A*
—	3	8	**Frozen Ghost, The**	*mys-mel A*
—	4	6	**G. I. Honeymoon**	*war-com A*
—	1	3	**Gangs of the Waterfront**	*cri-mel AYC*
—	1	2	**Gangster's Den**	*wes AYC*
—	2	3	**Gay Senorita, The**	*mus-com AYC*
—	4	4	**George White's Scandals**	*mus-com A*
2	7	3	**God is My Co-Pilot**	*war-dr AY*
—	5	5	**Great Flamarion, The**	*cri-mel A*
—	7	4	**Great John L., The**	*mus-mel A*
—	8	2	**Grissly's Millions**	*cri-mys A*
1	6	3	**Guest Wife**	*com A*
—	4	—	**Gun Smoke**	*wes AYC*
—	5	3	**Guy, a Gal, and a Pal, A**	*rom A*
—	2	3	**Half-Way House, The**	*fan A*
—	13	3	**Hangover Square**	*cri-mel A*
—	4	10	**Having Wonderful Crime**	*cri-com A*
—	3	3	**Her Highness and the Bellboy**	*rom AYC*
—	1	9	**Her Lucky Night**	*mus-com AYC*
—	9	5	**Here Come the Co-eds**	*mus-com AYC*
—	7	5	**Hidden Eye, The**	*cri-mys AYC*
—	3	7	**High Powered**	*mel A*
—	3	5	**Hitchhike to Happiness**	*mus-com AYC*
—	5	1	**Hollywood and Vine**	*com AYC*
—	2	5	**Honeymoon Ahead**	*mus-com A*
—	6	8	**Horn Blows at Midnight, The**	*com A*
1	9	3	**Hotel Berlin**	*war-mel A*
—	8	4	**House of Fear**	*mys-mel AYC*
1	1	9	**House of Frankenstein**	*cri-mel A*
—	2	3	**I Love a Bandleader**	*mus-dr AYC*
—	6	2	**I Love a Mystery**	*mys A*
1	6	3	**Identity Unknown**	*war-dr AYC*

A	B	C		
—	3	8	**I'll Remember April**	*mus-dr A*
—	4	5	**I'll Tell the World**	*mus-com AYC*
2	12	2	**Incendiary Blonde**	*mus-mel A*
—	4	2	**Isle of the Dead**	*mys-mel A*
—	8	7	**It's a Pleasure**	*mus-com-c A*
1	13	2	**It's in the Bag**	*cri-com AYC*
—	—	7	**Jade Mask, The**	*mys-mel A*
—	3	8	**Jealousy**	*mys-mel A*
—	—	—	**John Dillinger (See Dillinger)**	
—	8	2	**Johnny Angel**	*mys-mel A*
—	2	9	**Jungle Captive**	*mel A*
2	11	1	**Junior Miss**	*com AYC*
—	5	10	**Keep Your Powder Dry**	*war-dr A*
—	1	4	**Kid Sister, The**	*com A*
—	2	6	**Lady Confesses, The**	*cri-mel A*
—	3	5	**Lady on a Train**	*mys-com A*
—	3	3	**Last Hill, The**	*war-dr A*
—	—	3	**Law of the Valley**	*wes AYC*
—	7	3	**Leave It to Blondie**	*com AYC*
—	4	5	**Let's Go Steady**	*mus-com AYC*
6	8	2	**Life and Death of Col. Blimp**	*war-dr-c A*
—	2	2	**Lost Weekend, The**	*nov A*
1	7	2	**Love Letters**	*war-dr A*
—	4	4	**Main Street After Dark**	*cri-dr A*
—	1	5	**Mama Loves Papa**	*com A*
—	6	—	**Man from Oklahoma**	*mus-wes AYC*
—	1	6	**Man Who Walked Alone**	*war-com A*
—	3	3	**Marked Trails**	*wes AYC*
2	13	—	**Medal for Benny, A**	*dr A*
—	2	3	**Military Secret**	*war-mel A*
—	1	6	**Missing Corpse, The**	*cri-com A*
—	13	2	**Molly and Me**	*mus-com A*
—	2	2	**Moulin Rouge**	*mus-com A*
3	7	4	**Mr. Emmanuel**	*war-dr A*
—	3	2	**Muggs Rides Again**	*mel AYC*
—	4	5	**Mummy's Curse, The**	*mys-mel A*
—	7	7	**Murder, He Says**	*cri-com A*
—	14	2	**Music for Millions**	*mus-dr AYC*
6	10	1	**National Velvet**	*dr-c AYC*
—	6	9	**Naughty Nineties, The**	*mus-com AYC*
—	3	—	**Navajo Trail, The**	*wes AYC*
—	5	3	**Nevada**	*wes AYC*
—	2	6	**Night Club Girl**	*mus-com A*
—	7	7	**Nob Hill**	*mus-dr-c A*
5	6	2	**Objective, Burma**	*war-mel A*
1	4	5	**On Approval**	*com A*
—	4	3	**On Stage Everybody**	*mus-com AYC*
—	3	6	**One Exciting Night**	*cri-com A*
—	6	—	**Our Vines Have Tender Grapes**	*dr AYC*
1	12	3	**Out of This World**	*mus-com A*
—	8	3	**Over 21**	*com A*
1	8	7	**Pan-Americana**	*mus-com A*
—	4	2	**Paris Underground**	*war-mel A*
1	9	3	**Patrick the Great**	*mus-com AYC*
—	1	9	**Penthouse Rhythm**	*mus-com A*
—	2	4	**Phantom of 42nd St., The**	*cri-mel A*
—	5	3	**Phantom Speaks, The**	*mys-mel A*
—	8	9	**Picture of Dorian Gray, The**	*dr A*
—	8	7	**Pillow to Post**	*war-com A*
—	2	7	**Power of the Whistler**	*mys-mel A*
—	13	4	**Practically Yours**	*war-com A*
—	8	2	**Pride of the Marines**	*war-dr A*
—	2	4	**Radio Stars on Parade**	*mus-com AYC*
—	4	5	**Randolph Family, The**	*com A*
—	2	1	**Return of the Durango Kid, The**	*mus-wes AYC*
6	3	3	**Rhapsody in Blue**	*mus-biog AYC*
—	—	5	**Rhythm Round-Up**	*mus-wes AYC*
—	2	4	**Road to Alcatraz**	*cri-mys AYC*
—	—	5	**Rockin' in the Rockies**	*mus-wes AYC*
—	—	6	**Rogues Gallery**	*cri-mel A*
—	1	9	**Rough, Tough, and Ready**	*war-com A*
1	7	7	**Roughly Speaking**	*dr A*
1	10	7	**Royal Scandal, A**	*com A*
—	—	3	**Rustlers of the Badlands**	*mus-wes AYC*

A	B	C		
—	5	10	**Salome, Where She Danced**	*mus-dr-c A*
1	9	7	**Salty O'Rourke**	*mel A*
—	3	1	**Sante Fe Saddlemates**	*wes AYC*
—	—	7	**Scared Stiff**	*mys-com AYC*
—	3	4	**Scarlet Clue, The**	*mys-mel A*
—	4	10	**See My Lawyer**	*mus-com AYC*
—	1	3	**Shanghai Cobra, The**	*cri-mys A*
—	2	1	**Shanghai Drama, The**	*mel A*
—	4	4	**She Gets Her Man**	*cri-com AYC*
—	5	5	**She's a Sweetheart**	*war-mus-dr AYC*
1	6	—	**Silver Fleet, The**	*war-mel A*
2	5	7	**Son of Lassie**	*war-mel-c AYC*
—	2	5	**Song for Miss Julie, A**	*mus-com A*
—	—	10	**Song of the Sarong, The**	*mus-adv A*
6	9	3	**Song to Remember, A**	*hist-dr-c A*
1	7	4	**Southerner, The**	*soc-dr A*
—	2	3	**Spell of Amy Nugent, The**	*mel A*
—	1	2	**Springtime in Texas**	*mus-wes AYC*
2	6	1	**State Fair**	*mus-com-c AYC*
—	1	5	**Steppin' in Society**	*com A*
5	6	1	**Story of G. I. Joe**	*war-dr AYC*
—	—	—	**Strange Affair of Uncle Harry (See Uncle Harry)**	
—	6	2	**Strange Illusion**	*cri-mel AY*
—	1	2	**Stranger from Santa Fe**	*wes AYC*
—	6	8	**Sudan**	*mus-mel-c A*
1	13	2	**Sunday Dinner for a Soldier**	*war-com AYC*
1	11	4	**Suspect, The**	*cri-mel A*
—	—	9	**Swing Out, Sister**	*mus-com A*
—	2	4	**Swingin' On a Rainbow**	*mus-com A*
—	2	6	**Tahiti Nights**	*mus-com A*
—	5	6	**Tarzan and Amazons**	*adv AYC*
—	4	1	**Tell It to a Star**	*mus-com A*
—	2	8	**Ten Cents a Dance**	*mus-com A*
1	8	—	**That's the Spirit**	*mus-fan A*
—	—	4	**There Goes Kelly**	*mus-com AYC*
—	2	3	**They Came to a City**	*fan A*
—	5	2	**They Shall Have Faith**	*dr AYC*
—	8	4	**This Man's Navy**	*war-dr AYC*
—	2	3	**Thoroughbreds**	*mel A*
—	8	8	**Those Endearing Young Charms**	*war-rom A*
1	9	1	**Thousand And One Nights, A**	*mus-fan-c AYC*
8	5	5	**Three Caballeros, The**	*mus-car-c AYC*
—	—	3	**Three in the Saddle**	*mus-wes AYC*
—	—	3	**Three's a Crowd**	*cri-mel A*
2	10	4	**Thrill of a Romance**	*mus-com-c A*
1	13	1	**Thunderhead, Son of Flicka**	*wes-dr-c AYC*
1	12	5	**Tonight and Every Night**	*war-mus-com-c A*
7	10	—	**Tree Grows in Brooklyn, A**	*dr AY*
—	—	3	**Trouble Chasers**	*com A*
—	6	3	**Twice Blessed**	*com A*
—	3	7	**Two O'clock Courage**	*cri-mel A*
—	7	5	**Uncle Harry**	*cri-mel A*
—	1	6	**Under Western Skies**	*mus-wes AYC*
—	6	9	**Unseen, The**	*mys-mel A*
—	2	1	**Ural Front, The**	*war-dr A*
—	5	3	**Utah**	*mus-wes AYC*
3	10	1	**Valley of Decision, The**	*dr A*
—	1	8	**Vampire's Ghost, The**	*mys-mel A*
—	2	7	**Wait for Me**	*war-dr A*
2	9	1	**Way Ahead, The**	*war-dr A*
—	2	3	**We Accuse**	*war-doc A*
1	6	—	**Weekend at the Waldorf**	*mus-com A*
—	9	—	**West of the Pecos**	*wes AYC*
—	5	3	**What a Blonde**	*com A*
1	11	1	**Where Do We Go from Here?**	*mus-fan-c A*
—	1	3	**White Pongo**	*mel AYC*
—	2	2	**Wildfire**	*wes-c AYC*
—	3	6	**Within These Walls**	*soc-dr A*
—	12	2	**Without Love**	*rom A*
—	9	4	**Woman in Green, The**	*mys-mel AYC*
3	11	1	**Wonder Man, The**	*mus-com-c A*
—	2	5	**Why Girls Leave Home**	*mus-mel A*
—	9	1	**You Came Along**	*war-mus-dr AYC*
—	1	2	**You Can't Do Without Love**	*mus-mys AYC*
—	4	5	**Youth on Trial**	*dr A*
1	2	—	**Ziegfield Follies**	*mus-com-c A*
—	1	9	**Zombies on Broadway**	*com A*
—	—	8	**Zoya**	*war-dr A*

The Consumers' Observation Post

[Continued from page 4]

is simple. Just clip a portion of the wool with a spring clothespin and tie it by a string to a hook near the sink where it will be all ready to use.

* * *

HOME CANNERS, who started their activities in the early days of World War II to supplement their families' food supplies, are by now experts in the field. They have doubtless learned by trial and error what methods give good results and which result in spoilage. In a study made at the Massachusetts Agricultural Experiment Station of 293 samples of home canned foods, it was concluded that about three-fourths of home-canning spoilage was due to under-sterilization and the remaining one-fourth to improper sealing. Even when the pressure canner was used, understerilization might result if directions were not properly followed.

* * *

COOK THAT GRASS-FED ROAST of beef—when you get it—at a low temperature to make it tender and keep it moist and palatable. In experiments reported by the Texas Agricultural Experiment Station, bottom round roasts which contained a large amount of coarse connective tissue were cooked well-done after 40 hours at 175°F and with few exceptions pronounced "very tender" by the judges. Since it would not be convenient or practicable to tie up the family oven for this length of time, the housewife may prefer to compromise on 300°F (or even 250°), allowing approximately 20 minutes to the pound for rare beef, 30 minutes to the pound (at the 300° temperature) if her family prefers it well-done.

* * *

POOR ACCELERATION of many automobiles may be caused by an accumulation of carbon in the intake manifold resulting from sticking of the heat valve controls (with which most cars are equipped) in the open position. (The heat control is for the purpose of obtaining complete vaporization of the fuel before it enters the manifold from the carburetor; this it does by passing the fuel-air mixture through a chamber whose walls are exposed to the heat of the exhaust gases from the engine.) Removal of this carbon incrustation by sand-blasting has remedied 85% of the complaints of poor acceleration, according to a recent item in the technical journal of the Society of Automotive Engineers.

* * *

SURVEYS of what the average American will buy as soon as things are again available are beginning to be as out of date as that well-worn alibi "Don't you know there's a war on?" It is interesting, however, to note one reported by a clothing journal last July which indicated that consumers were looking forward to purchasing automobiles, refrigerators, washing machines, golf clubs,

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GOING.... GOING ....

NO, CR's new 1945 Annual Cumulative Bulletin is not GONE—not yet. In fact, it was only mailed the last week of September to subscribers who had placed their orders for it in advance of publication.

BUT, *it is moving very rapidly! This 200-page summary of a wide range of CR's previous findings, together with much new information, in the fields of Food, Home Maintenance & Repair, Heating & Fuel, Automobiles, Textiles & Clothing, Medicine & Hygiene, Household Appliances & Supplies, Cosmetics & Toilet Supplies, Phonograph Records, and Writing Materials, provides critical consumers with practical, specific, money-saving information about many of the things they need to buy.*

IF YOU HAVE NOT ALREADY DONE SO, WE SUGGEST THAT YOU USE THE BLANK ON THE NEXT PAGE TO ORDER YOUR COPY NOW!

and Scotch whiskey, but failed to mention men's clothing. The conclusion drawn was that "The honeymoon is over as far as the public's clamoring for clothing is concerned." And it is just possible that the men are waiting for the reappearance of the $1.50 and $2 shirts, 50c shorts, and the two-trouser suit before they show any great inclination to buy.

* * *

SHAMPOOS for milady's hair may be soap in one form or another or they may be a "toilet preparation." There is a 20 percent excise tax on toilet preparations, but none on soap. According to a recent Treasury ruling, reported by The Wall Street Journal, any shampoo that contains more than 5 percent saponaceous matter is subject to tax unless its advertising recommends it solely for cleansing purposes. It will cost a girl 20 cents on the dollar to buy a shampoo that claims to do more—even if she doesn't get anything for the extra money.

* * *

MIXED-DRINKS such as cocktails produce worse hangovers than liquor taken straight, according to an item in The Drug and Cosmetic Industry. The explanation as given by a South American physician is that the volatile oils usually found in the mixed drinks have a bad effect on the heart, circulation, and central nervous system. The good doctor suggests that the same amount of good brandy, in the same concentration, will generally do much less harm.

* * *

GETTING ELECTRIC MOTORS REPAIRED has been a difficult matter in many cases, and will continue to present problems to the consumer for some months even after new motor production has been under way. A recent Sears-Roebuck announcement offers motor-repair service at approximate prices which run $3.85 to $6.05 for 1/4 horsepower washer motors; $3.85 to $8.80 for 1/3 h.p. pump motors; $4.68 to $12.10 for 1/2 h.p. lathe motors. While these prices may seem high to those used to the surprisingly low costs of many new and high-grade used motors before the war, they would appear to be rather reasonable in comparison with what is often being asked in the present market for repair work on motors.

* * *

NEW PRODUCT: Collins Lustre-Lac Polish, for cleaning and polishing auto bodies, furniture, floors, leather, and windows (D. A. Collins Mfg. Co., Inc., Brooklyn; 10c for 6 fl. oz.) is a mixture consisting approximately one-half of light mineral oil, with a few percent of sulfonated oil, and a small amount of ammonia or amine; the rest is water. As the mixture is combustible, it must not be used in the presence of fire or flame, or when smoking. It is considered that this product should be satisfactory for use, if proper precautions are taken against fire hazard and risk is avoided of spontaneous combustion of any cloth or rags used in applying it, by burning them after use, or storing in a closed metal canister in a safe place.

Consumers' Research, Inc.
Washington, N. J.

Please enter my order as checked. It is understood that my handling of any CR material which is marked "The analyses of commodities, products, or merchandise appearing in this issue of the Consumers' Research Bulletin are for the sole information of Consumers' Research subscribers" will be in accordance with that direction.

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PHONOGRAPH RECORDS

By Walter F. Grueninger

Please Note: Prices quoted do not include taxes. In the ratings AA indicates highly recommended; A, recommended; B, intermediate; C, not recommended.

THE special sample pressing I have received of the new Victor plastic record (sides 2 and 3 of the Strauss *Till Eulenspiegel* set to be released in October—certainly an AA performance) reveals unusual clarity for Boston Symphony recordings and barely audible surfaces. Much of the new clarity is probably due to reduced surface noise which enables one to hear plainly frequencies that would be obscured by loud surface noise. The disc, however, may possess the shortcomings of a vinylite transcription which wears out more quickly than a shellac record unless played with a light, compliant pickup.

In many respects, the disc resembles that used for radio transcriptions and Army V discs. It is ruby red, transparent, made almost entirely of vinyl resin plastic. Victor claims for it: unbreakable, flexible, high fidelity, lighter weight, less surface noise, playable on nearly all types of home phonographs with varied types of needles.

At present Victor plans to release only newly recorded musical works on these discs to be known as Red Seal De Luxe Records. Later the same musical works will be pressed on shellac records.

The important question that remains to be answered is this: on *your* phonograph will you get as many performances out of this record as you do from a shellac pressing? Related to that is the next question: are you willing to pay $2 for this De Luxe disc compared to $1 for a shellac-base disc?

ORCHESTRA

Bach-Gounod: *Ave Maria* & **Schubert:** *Ave Maria.* Philharmonic Orchestra of Los Angeles under Wallenstein. 2 sides, Decca 23424. 75c. Satisfactory performances of these popular classics, though I prefer a solo voice or instrument. Better than this disc, however, is Columbia's 12 inch 7416 ($1) on which Kostelanetz's orchestra plays each composition through twice, in a slightly different arrangement each time, whereas Wallenstein plays each once. **Interpretation A**
Fidelity of Recording A

Brahms: *Symphony No. 3.* Boston Symphony Orchestra under Koussevitzky. 8 sides, Victor Set 1007. $4.50. One of Brahms' great works. The recording falls short on bass and occasionally on brilliance in the higher registers, noticeably at the first entrance of the violins. Compared with Bruno Walter's pre-war Vienna recorded Victor Set 341, on the whole the new set offers more body in the violins but less in the bass. As for performance—Walter's is less frenzied, more congenial, better paced to the spirit of Brahms. Weingartner's Columbia Set 353 has long shared the spotlight with Victor 341. Overall, the older sets give no ground. **Interpretation B**
Fidelity of Recording A

Gretry: *Cephale et Procris-Airs de Ballet.* Chicago Symphony Orchestra under Defauw. 2 sides, Victor 11-8825. $1. Tambourin, menuetto, and gigue by the eighteenth century Belgian who contributed much to modern "opera comique." This charming, bubbling music is sometimes performed with more subtlety but it suffers little from the more robust interpretation. The slight echo does not seem to muddy the recording. **Interpretation A**
Fidelity of Recording AA

Schonberg: *Verklarte Nacht* (7 sides) & **Corelli:** *Adagio* (1 side). St. Louis Symphony Orchestra under Golschmann. Victor Set 1005. $4.50. Schonberg's most popular work, composed in 1899 for sextet, later arranged by him for string orchestra as performed here. In 1942 the Ballet Theater used it for "Pillar of Fire." Easily surpasses Victor Set 207. Recording somewhat shrill. Performance excellent.
Interpretation AA
Fidelity of Recording A

Strauss: *Der Rosenkavalier Suite.* Cincinnati Symphony Orchestra under Goossens. 6 sides, Victor Set 997. $3.50. Richard Strauss composed much of this music for voice, all with stage action. Arranged here for symphony orchestra by Antal Dorati, it seems more complex, less satisfying. The recording, clear in the middle and high registers could do with more bass and wider dynamic range and less echo. On my pressing, sides two and six swish, side five buzzes.
Interpretation A
Fidelity of Recording A

PIANO

Debussy: *Selections.* Gaby Casedesus (piano). 8 sides, Asch Set 103. $4.50. Eight characteristic Debussy compositions played sensitively. Unfortunately, noisy surfaces. Included are "La Fille Aux Cheveux de Lin," "Voiles," "Minstrels," "Golliwogg's Cakewalk," etc. **Interpretation A**
Fidelity of Recording A

Franck: *Prelude, Chorale and Fugue.* Rubinstein (piano). 4 sides, Victor Set 1004. $2.50. Considered one of Franck's most outstanding compositions, though it appeals particularly to the connoisseur. Petri, in competitive Columbia X-176, plays with greater depth of feeling, though less brilliantly. Rubinstein is recorded more loudly and with wider range but his records offer, also, more surface noise. Overall, Rubinstein is likely to be the choice of most. **Interpretation A**
Fidelity of Recording AA

LIGHT, POPULAR, AND MISCELLANEOUS

Stephen Foster Favorites. Sammy Kaye and His Orchestra and Vocalists. 10 sides, Victor Set P-140. $3. Swing versions of the best loved Foster tunes—"Swanee River," "Old Black Joe," "My Old Kentucky Home," "Beautiful Dreamer," etc. Only for swing fans. Neither arrangements nor performances are distinctive. **Interpretation B**
Fidelity of Recording AA

Strictly GI. Singers. 8 sides, Asch Set 455. $4.50. A distinctive set which aims to produce, as the folder states, "real GI material performed by GI's as it might have taken place at the PX, the barracks, or the Rec Hall. Mistakes or imperfections in performance were of secondary nature." In attaining that informality and presenting GI comedy the album is eminently successful, and gives us, as a consequence, a valid social document rather than an artistic triumph. Performers include Johnny Messner, Kenneth Spencer (civilian), Buddy Moreno, Jules Munshin, etc. Titles include "Laundry," "Who Needs a Mood for Love," "Rotation," "KP's are Scrubbin' Away," "V Plus One," etc. Also, parodies on "Ain't Misbehavin'," "Man on the Flying Trapeze," "Road to Mandalay," etc. The recording, uneven in quality, lacks highs and clarity, frequently swishes and buzzes. The 12 page booklet containing the words helps out in moments of doubt. So far as my turntable is concerned, despite its shortcomings, this set stopped the show. **Interpretation B**
Fidelity of Recording B

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